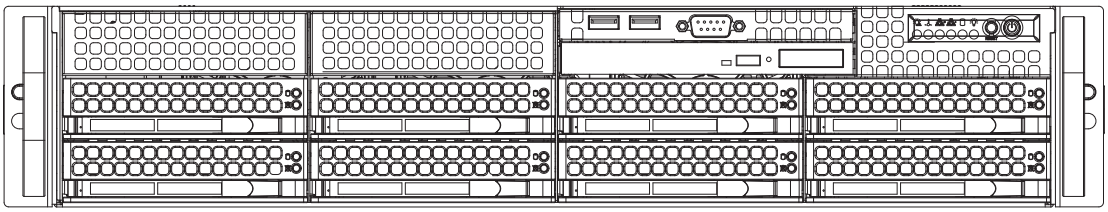
Series3800/S120R-2



USER'S MANUAL

1.0b

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the Series3800/S120R-2 (6025B-3/6025B-3R). Installation and maintainance should be performed by experienced technicians only.

The Series3800/S120R-2 (6025B-3/6025B-3R) is a high-end server based on the SC825TQ-560LP/SC825TQ-R700LP 2U rackmount chassis and the X7DB3, a dual processor serverboard that supports single or dual Intel® dual-core Xeon™ 5000/5100 Sequence processors at a Front Side (System) Bus speed of 1333 MHz and up to 32 GB of FBD ECC DDR2-667/533 SDRAM.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the X7DB3 serverboard and the SC825TQ-560LP/SC825TQ-R700LP chassis, which comprise the Series3800/S120R-2 (6025B-3/6025B-3R).

Chapter 2: Server Installation

This chapter describes the steps necessary to install the Series3800/S120R-2 (6025B-3/6025B-3R) into a rack and check out the server configuration prior to powering up the system. If your server was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer here for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the Series3800/S120R-2 (6025B-3/6025B-3R).

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the X7DB3 serverboard, including the locations and functions of connections, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the serverboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC825TQ-560LP/SC825TQ-R700LP server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SAS or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

Appendix A: BIOS POST Messages

Appendix B: BIOS POST Codes

Appendix C: RAID and Software Installation

Appendix D: System Specifications

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Chapter 1

Introduction

1-1 Overview

The Series3800/S120R-2 (6025B-3/6025B-3R) is a high-end server that is comprised of two main subsystems: the SC825TQ-560LP/SC825TQ-R700LP 2U server chassis and the X7DB3 Intel dual Xeon processor serverboard. Please refer to our web site for information on operating systems that have been certified for use with the Series3800/S120R-2 (6025B-3/6025B-3R).

In addition to the serverboard and chassis, various hardware components have been included with the Series3800/S120R-2 (6025B-3/6025B-3R), as listed below:

- Three (3) 8-cm hot-swap chassis fans (FAN-0094L)
- One (1) DVD-ROM drive [DVM-PNSC-824V(B)]
- One (1) air shroud (MCP-310-00005-00)
- One (1) front control panel cable (CBL-0087)
- SAS Accessories
  One (1) SAS backplane (BPN-SAS-825TQ)
  Two (2) SAS cables (CBL-0176L)
  Eight (8) hot-swap drive carriers [MCP-220-00001-03(01)]
- Two (2) CPU passive heatsinks (SNK-P0018)
- One (1) rackmount kit (MCP-290-00002-00)

Note: the "V" at the end of a server name (e.g. 6025B-3V/6025B-3RV) denotes the chassis is silver in color.

1-2 Serverboard Features

At the heart of the Series3800/S120R-2 (6025B-3/6025B-3R) lies the X7DB3, a dual processor serverboard based on the Intel 5000P chipset and designed to provide maximum performance. Below are the main features of the X7DB3. (See Figure 1-1 for a block diagram of the 5000P chipset).

Processors

The X7DB3 supports single or dual Intel dual-core Xeon 5000/5100 Sequence processors at a FSB speed of 1333 MHz.

Memory

The X7DB3 has eight 240-pin DIMM slots that can support up to 32 GB of FBD (Fully Buffered DIMMs) ECC DDR2-667/533 SDRAM. The memory operates in a 2-way interleaved configurations and requires requires modules of the same size and speed to be installed in pairs (two at a time). See Section 5-5 for details.

Onboard SAS

An onboard Adaptec AIC-9410 SAS controller in integrated into the X7DB3, which supports eight SAS hard drives. The SAS drives are connected to a backplane that provides power, bus termination and configuration settings. The SAS drives are hot-swappable units.

Note: The operating system you use must have RAID support to enable the hot-swap capability and RAID function of the SAS drives. RAID 0, 1 and 10 are supported.

PCI Expansion Slots

The X7DB3 has six PCI expansion slots, which includes two x8 PCI-Express slots, one x4 PCI-Express slot, two 64-bit 133 MHz PCI-X slots and one 64-bit 100 MHz PCI-X slot. The 100 MHz PCI slot supports Zero Channel RAID.

Onboard Controllers/Ports

One floppy drive controller and two onboard ATA/100 controllers are provided to support up to four IDE hard drives or ATAPI devices. The color-coded I/O ports include one COM port (an additional COM header is located on the serverboard), a VGA (monitor) port, a parallel port, two USB 2.0 ports, PS/2 mouse and keyboard ports and two gigabit Ethernet ports.

ATI Graphics Controller

The X7DB3 features an integrated ATI video controller based on the ES1000 graphics chip. The ES1000 was designed specifically for servers, featuring low power consumption, high reliability and superior longevity.

Other Features

Other onboard features that promote system health include onboard voltage monitors, a chassis intrusion header, auto-switching voltage regulators, chassis and CPU overheat sensors, virus protection and BIOS rescue.

1-3 Server Chassis Features

The following is a general outline of the main features of the SC825TQ-560LP/ SC825TQ-R700LP server chassis.

System Power

The SC825TQ-560LP features a single 560W power supply. The system must be shut down and the AC power cord removed before replacing or performing any service on the power supply unit. The SC825TQ-R700LP features a redundant 700W power supply consisting of two power modules. The system does not need to be shut down when replacing or removing a single power supply module.

SAS Subsystem

The SC825TQ-560LP/SC825TQ-R700LP chassis was designed to support eight SAS hard drives, which are hot-swappable units.
Note: The operating system you use must have RAID support to enable the hot-swap capability of the SAS drives.

Front Control Panel

The control panel on the Series3800/S120R-2 (6025B-3/6025B-3R) provides you with system monitoring and control. LEDs indicate system power, HDD activity, network activity, system overheat and power failure. A main power button and a system reset button are also included. In addition, two USB ports have been incorporated into the control panel to provide front side USB access.

I/O Backplane

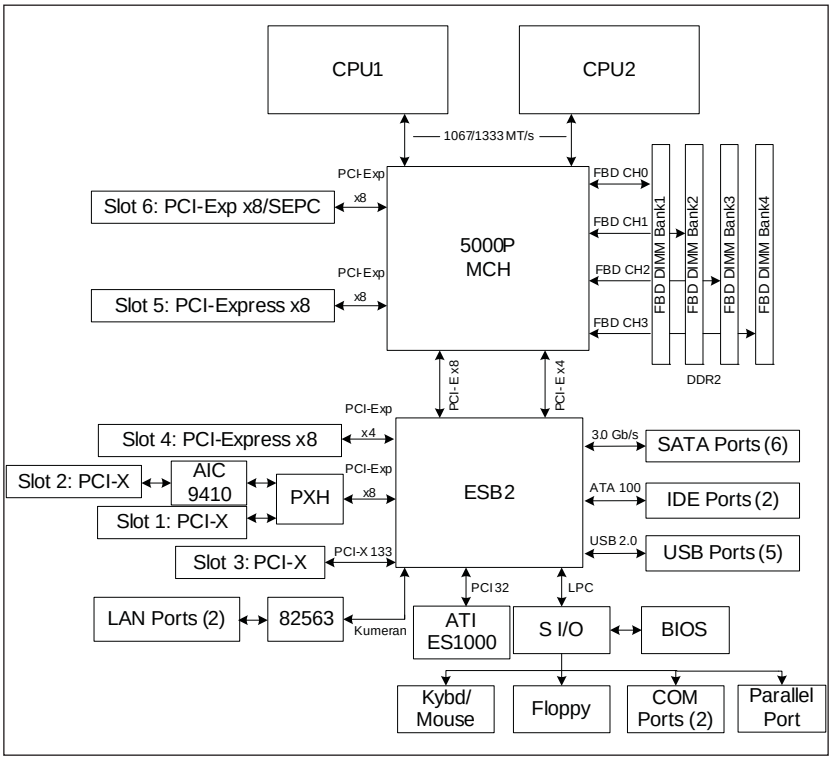
The SC825TQ-560LP/SC825TQ-R700LP is an ATX form factor chassis designed for use in a 2U rackmount configuration. The I/O backplane provides seven low-profile PCI expansion slots, one COM port, a parallel port, a VGA port, two USB 2.0 ports, PS/2 mouse and keyboard ports and two gigabit Ethernet ports.

Cooling System

The SC825TQ-560LP/SC825TQ-R700LP chassis has an innovative cooling design that includes three 8-cm hot-plug system cooling fans located in the middle section of the chassis. An air shroud channels the airflow from the system fans to efficiently cool the processor and onboard memory area of the system. The power supply module also includes a cooling fan.

Figure 1-1. Intel 5000P Chipset: System Block Diagram

Note: This is a general block diagram. Please see Chapter 5 for details.



1-4 Notes

Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your Series3800/S120R-2 (6025B-3/6025B-3R) up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a serverboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2 Unpacking the System

You should inspect the box the Series3800/S120R-2 (6025B-3/6025B-3R) was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the Series3800/S120R-2 (6025B-3/6025B-3R). It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

2-3 Preparing for Setup

The box the Series3800/S120R-2 (6025B-3/6025B-3R) was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
-This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).
-This product is not suitable for use with visual display work place devices acccording to §2 of the the German Ordinance for Work with Visual Display Units.

Warnings and Precautions!

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

Server Precautions

- Review the electrical and general safety precautions in Chapter 4.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot plug SAS drives and power supply units to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

2-4 Installing the System into a Rack

This section provides information on installing the Series3800/S120R-2 (6025B-3/6025B-3R) into a rack unit. If the S120R-2 has already been mounted into a rack, you can skip ahead to Sections 2-5 and 2-6. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. The following is a guideline for installing the system into a rack with the rack rails provided. You should also refer to the installation instructions that came with the rack unit you are using.

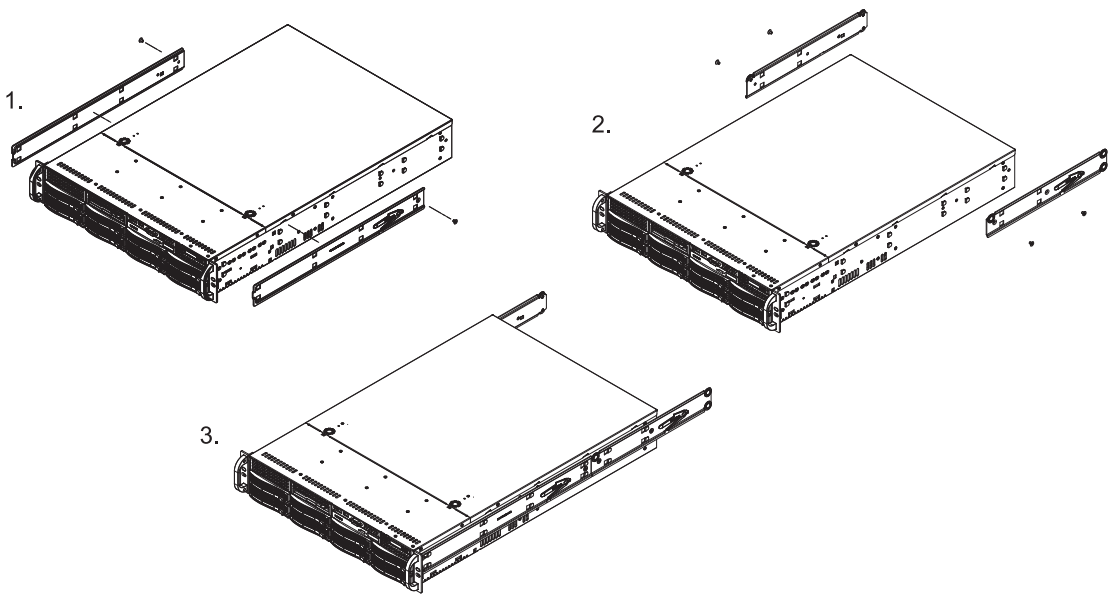
Installing the Chassis Rails

You should have received four rack sections with the S120R-2 consisting of two long and two short rails sections. These secure directly to the chassis. All screws and hardware mentioned in the installation steps should be included in the hardware kit.

Position the chassis rail sections alongside of the chassis making sure the screw holes line up - the long sections to the front of the chassis and the sorter ones to the rear. Note that these rails are left/right specific. Screw the rails securely to the chassis (see Figure 2-1). There should be two screws for each section. Repeat this procedure for the other rail on the other side of the chassis. You will also need to attach the rail brackets when installng into a telco rack.

Locking Tabs: The chassis rails have a locking tab, which serves two functions. The first is to lock the server into place when installed and pushed fully into the rack, which is its normal position. Secondly, these tabs also lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing.

Figure 2-1. Installing Chassis Rails

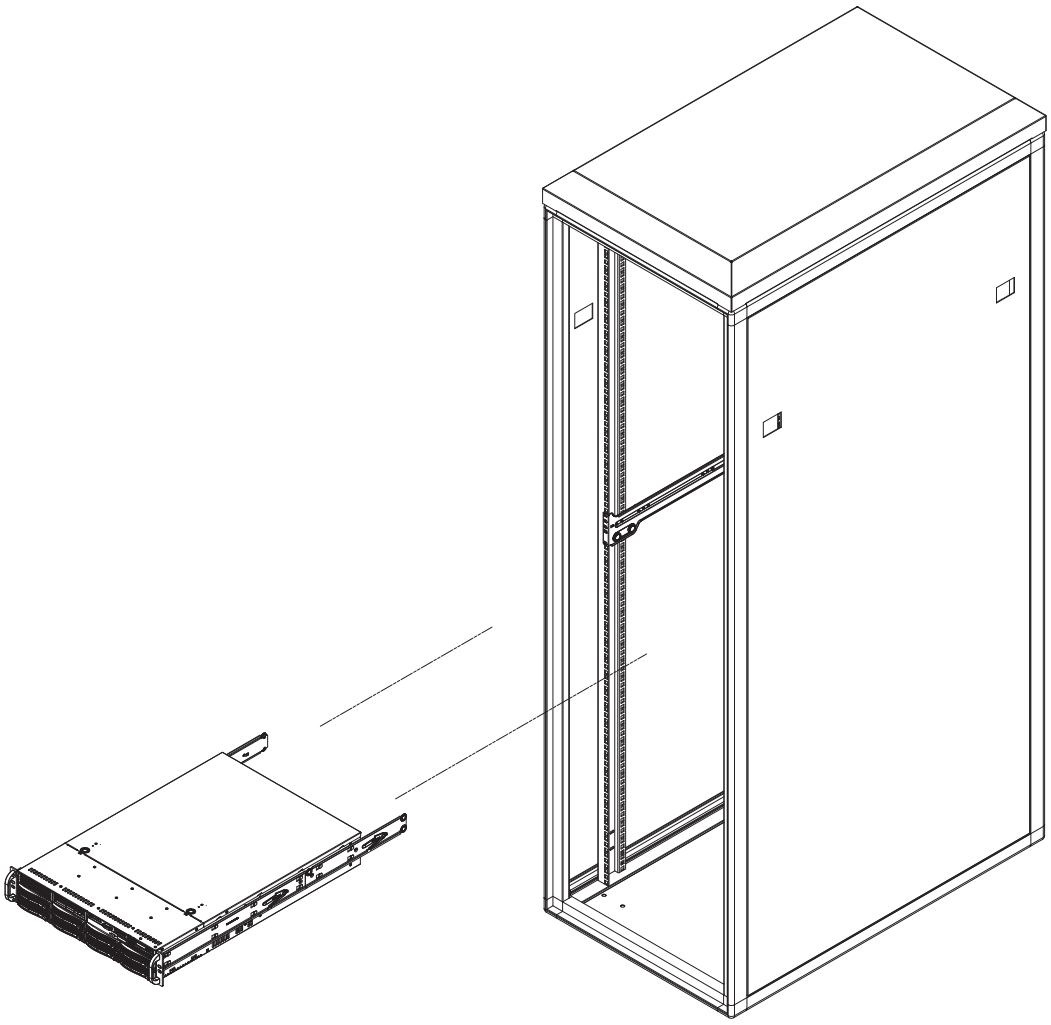


Installing the Server into the Rack

The next step is to install the server into the rack. Do this by lining up the rear of the chassis rails with the front of the rack rails. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). See Figure 2-2.

When the server has been pushed completely into the rack, you should hear the locking tabs "click". Finish by inserting and tightening the thumbscrews that hold the front of the server to the rack.

Figure 2-2. Installing the Server into a Rack



Installing the Server into a Telco Rack

To install the Series3800/S120R-2 (6025B-3/6025B-3R) into a Telco type rack, use two L-shaped brackets on either side of the chassis (four total). First, determine how far the server will extend out the front of the rack. Larger chassis should be positioned to balance the weight between front and back. If a bezel is included on your server, remove it. Then attach the two front brackets to each side of the chassis, then the two rear brackets positioned with just enough space to accommodate the width of the rack. Finish by sliding the chassis into the rack and tightening the brackets to the rack.

2-5 Checking the Serverboard Setup

After you install the S120R-2 in the rack, you will need to open the unit to make sure the serverboard is properly installed and all the connections have been made.

1. Accessing the inside of the System (see Figure 2-3)

First, grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click"). Next, depress the two buttons on the top of the chassis to release the top cover. You can then lift the top cover from the chassis to gain full access to the inside of the server.

2. Check the CPUs (processors)

You may have one or two processors already installed into the serverboard. Each processor needs its own heatsink. See Chapter 5 for instructions on processor and heatsink installation.

3. Check the system memory

Your S120R-2 server system may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Chapter 5.

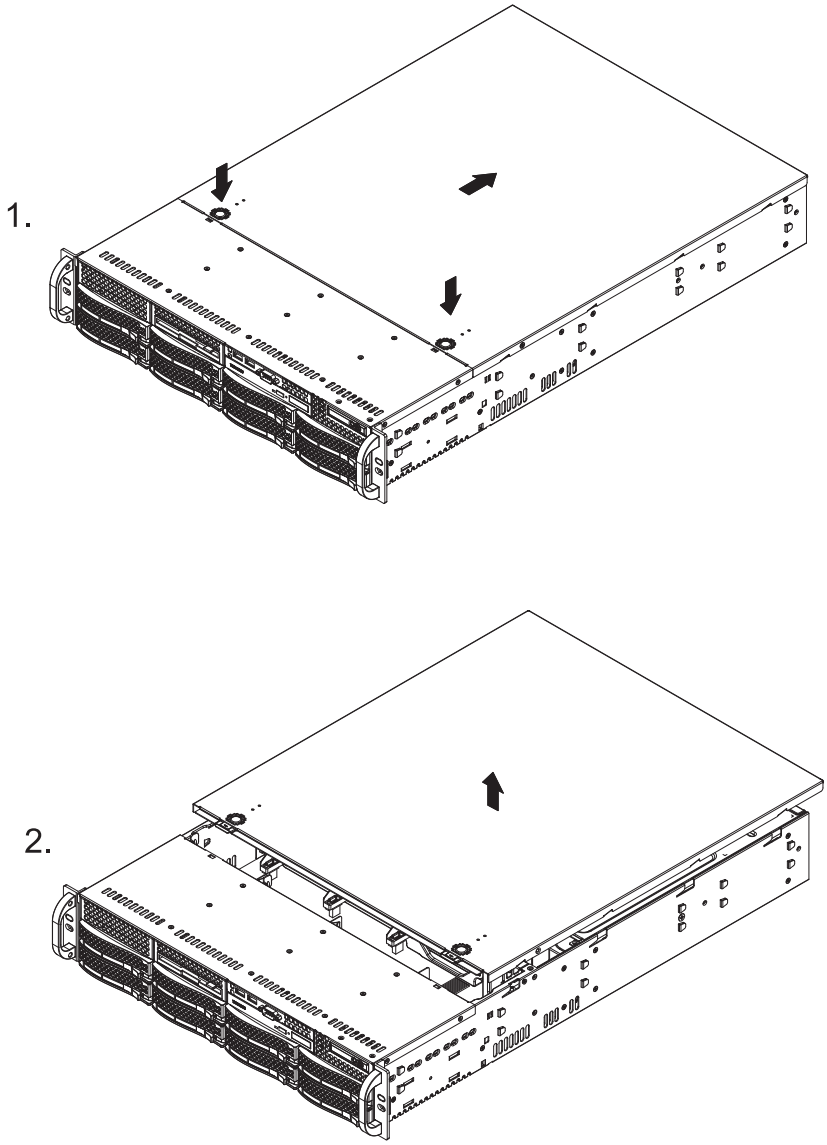
4. Installing add-on cards

If desired, you can install add-on cards to the system. See Chapter 5 for details on installing PCI add-on cards.

5. Check all cable connections and airflow

Make sure all power and data cables are properly connected and not blocking the chassis airflow. Also make sure that no cables are positioned in front of the fans. See Chapter 5 for details on cable connections.

Figure 2-3. Accessing the Inside of the System



2-6 Checking the Drive Bay Setup

Next, you should check to make sure the peripheral drives and the Serial ATA or drives have been properly installed and all connections have been made.

1. Accessing the drive bays

All drives are accessable from the front of the server. For servicing the DVD-ROM and floppy drives, you will need to remove the top chassis cover. The SAS disk drives can be installed and removed from the front of the chassis without removing the top chassis cover.

2. DVD-ROM and floppy disk drives

A slim DVD-ROM and a floppy drive should be preinstalled in your server. Refer to Chapter 6 if you need to reinstall a DVD-ROM and/or floppy disk drive to the system.

3. Check the SAS drives

Depending upon your system's configuration, your system may have one or more drives already installed. If you need to install SAS drives, please refer to Chapter 6.

4. Check the airflow

Airflow is provided by three 8-cm center chassis cooling fans. The system component layout was carefully designed to direct sufficient cooling airflow to the components that generate the most heat. Note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fans.

5. Supplying power to the system

The last thing you must do is to provide input power to the system. Plug the power cord(s) from the power supply module(s) into a high-quality power strip that offers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS).

Notes

Chapter 3

System Interface

3-1 Overview

There are several LEDs on the control panel as well as others on the SAS (Serial Attached SCSI) drive carriers to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. There are also two buttons on the chassis control panel.

3-2 Control Panel Buttons

The two push-buttons located on the front of the chassis are (in order from left to right) a reset button and a power on/off button.

- **RESET:** Use the reset button to reboot the system.

- **POWER:** This is the main power button, which is used to apply or turn off the main system power. Turning off system power with this button removes the main power but keeps standby power supplied to the system.

3-3 Control Panel LEDs

The control panel located on the front of the chassis has several LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

- **Power Fail:** (6025B-3R only) Indicates a power supply module has failed. The second power supply module will take the load and keep the system running but the failed module will need to be replaced. Refer to Chapter 6 for details on replacing power modules. This LED should be off when the system is operating normally.

- **Overheat/Fan Fail:** When this LED flashes, it indicates a fan failure. When on continuously it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly (see Chapter 5). This LED will remain flashing or on as long as the indicated condition exists.

- **NIC1:** Indicates network activity on the JLAN1 port when flashing.

- **NIC2:** Indicates network activity on the JLAN2 port when flashing.

- **HDD:** Indicates IDE channel activity. On the Series3800/SR120-2 (6025B-TR+/6025B-8R+), this LED indicates SAS and/or DVD-ROM drive activity when flashing.

- **Power:** Indicates power is being supplied to the system's power supply module(s). This LED should normally be illuminated when the system is operating.

3-4 SAS Drive Carrier LEDs

Each SAS drive carrier has two LEDs.

- **Green:** When illuminated, the green LED on the front of the SAS drive carrier indicates drive activity. A connection to the SAS backplane enables this LED to blink on and off when that particular drive is being accessed.

- **Red:** The red LED indicates two states. When blinking, it indicates the drive is rebuilding. When solid, it indicates a drive failure. If a SAS drive fails, you should be notified by your system management software. Please refer to Chapter 6 for instructions on replacing failed SAS drives.

Note: the two drive bays on the top left of the Series3800/120R-2 (6025B-3 /6025B-3R) are not connected to a backplane. These may be used to house IDE type hard drives only and are not hot-swappable.

Notes

Chapter 4

System Safety

4-1 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the Series3800/S120R-2 (6025B-3/6025B-3R) from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.
- Do not work alone when working with high voltage components.
- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and the DVD-ROM and floppy drives. When disconnecting power, you should first power down the system with the operating system and then unplug the power cords of all the power supply units in the system.
- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.
- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.
- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.
- The power supply power cord must include a grounding plug and must be

plugged into grounded electrical outlets.

- Serverboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarities (see Figure 4-1). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

- DVD-ROM Laser: **CAUTION** - this server may have come equipped with a DVD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

- Mainboard replaceable soldered-in fuses: Self-resetting PTC (Positive Temperature Coefficient) fuses on the mainboard must be replaced by trained service technicians only. The new fuse must be the same or equivalent as the one replaced. Contact technical support for details and support.

4-2 General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the S120R-2 clean and free of clutter.

- The S120R-2 weighs approximately 53/55 lbs (24.1/25 kg.) when fully loaded. When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs. Don't use the handles (if installed) to lift the chassis; the handles should only be used to pull the server out of the rack.

- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.

- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.

- Remove any jewelry or metal objects from your body, which are excellent metal

conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

4-3 ESD Precautions

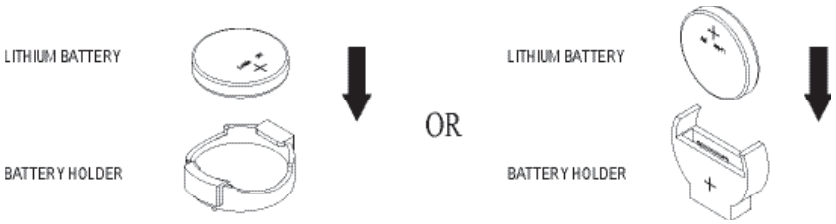
Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

4-4 Operating Precautions

Care must be taken to assure that the chassis cover is in place when the S120R-2 is operating to assure proper cooling. Out of warranty damage to the S120R-2 system can occur if this practice is not strictly followed.

Figure 4-1. Installing the Onboard Battery



Chapter 5

Advanced Serverboard Setup

This chapter covers the steps required to install processors and heatsinks to the X7DB3 serverboard, connect the data and power cables and install add-on cards. All serverboard jumpers and connections are described and a layout and quick reference chart are included in this chapter. Remember to close the chassis completely when you have finished working on the serverboard to protect and cool the system sufficiently.

5-1 Handling the Serverboard

Static electrical discharge can damage electronic components. To prevent damage to printed circuit boards, it is important to handle them very carefully (see Chapter 4). Also note that the size and weight of the serverboard can cause it to bend if handled improperly, which may result in damage. To prevent the serverboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from static discharge.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.

Unpacking

The serverboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

5-2 Processor and Heatsink Installation

When handling the processor, avoid placing direct pressure on the label area of the fan. Also, do not place the serverboard on a conductive surface, which can damage the BIOS battery and prevent the system from booting up.

IMPORTANT! Always connect the power cord last and remove it first before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket *before* you install the heatsink and fan. The X7DB3 can support either one or two Xeon 5000/5100 type processors. If installing one processor only, install it into CPU socket #1.

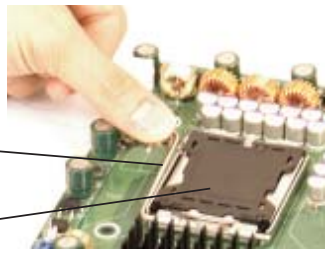
Notes:

1. Intel's boxed Xeon CPU package contains a CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only Intel-certified multi-directional heatsinks and fans.

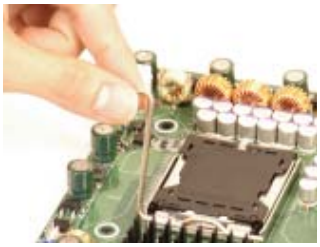
2. When purchasing a Xeon 5000/5100 CPU or when receiving a serverboard with a CPU pre-installed, make sure that the CPU plastic cap is in place and none of the CPU pins are bent; otherwise, contact the retailer immediately.

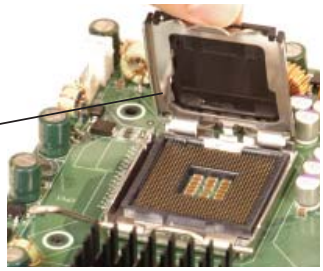
Installing the Processor

1. A black PnP cap is attached to the load plate to protect the CPU socket. Press the load lever down and away from the retention clasp to release the load plate from its locked position.



2. Gently lift the load lever to open the load plate.

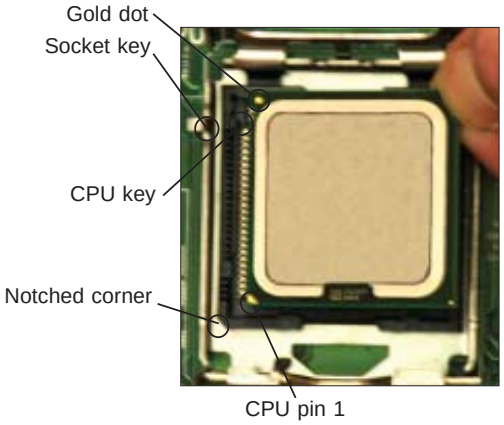




3. Use your thumb and your index finger to hold the CPU at opposite sides.

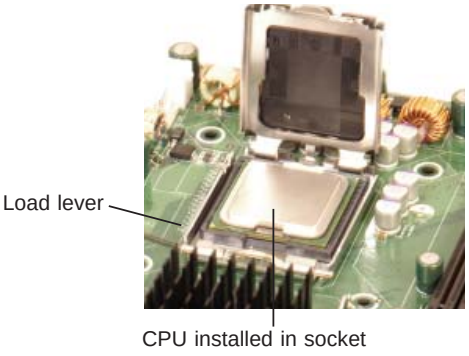
4. Align pin1 of the CPU (the corner marked with a triangle) with the notched corner of the CPU socket.

5. Find the corner of the CPU that has a semi-circle cutout below a gold dot (CPU key). This corner should be aligned with the cutout on the socket (socket key).



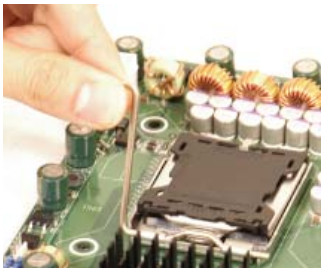
6. Once aligned, carefully lower the CPU straight down into the socket. Do not drop the CPU on the socket, do not move the CPU horizontally or vertically and do not rub the CPU against any surface or any of the contacts, which may damage the CPU and/or contacts.

7. With the CPU in the socket, inspect the four corners of the CPU to make sure that it is properly installed.

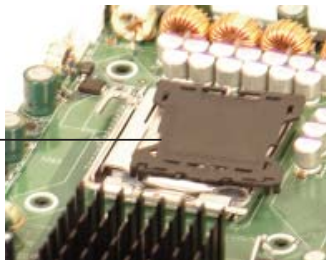


8. Use your thumb to gently push the load lever down until it snaps into the retention clasp.

9. If the CPU is properly installed into the socket, the PnP cap will be automatically released from the load plate when the lever locks. Remove the cap. Repeat steps to install a second CPU if desired.



Warning! Keep the plastic PnP cap. The serverboard must be shipped with the PnP cap properly installed to protect the CPU socket. Shipment without the PnP cap properly installed will void the warranty.



Installing the Heatsink

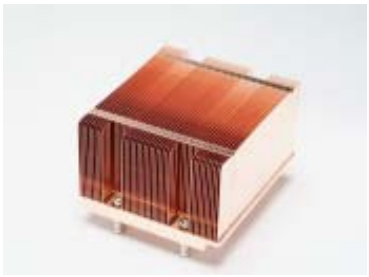
1. Do not apply any thermal grease to the heatsink or the CPU die; the required amount has already been applied.

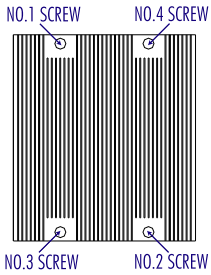
2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the (preinstalled) heatsink retention mechanism.

3. Screw in two diagonal screws (i.e. the #1 and the #2 screws) until just snug. Do not fully tighten the screws or you may damage the CPU.)

4. Add the two remaining screws then finish the installation by fully tightening all four screws.

CEK Passive Heatsink





Removing the Heatsink

Warning! We do not recommend that the CPU or the heatsink be removed. However, if you do need to uninstall the heatsink, please follow the instructions below to prevent damage to the CPU or the CPU socket.

1. Unscrew and remove the heatsink screws from the serverboard in the sequence as show in the picture above.

2. Hold the heatsink and gently wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when wriggling the heatsink!!)

3. Once the heatsink is loose, remove it from the CPU socket.

4. Clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease on the surface before you re-install the heatsink.

5-3 Connecting Cables

Now that the processors are installed, the next step is to connect the cables to the serverboard. These include the data (ribbon) cables for the peripherals and control panel and the power cables.

Connecting Data Cables

The ribbon cables used to transfer data from the peripheral devices have been carefully routed in preconfigured systems to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to reroute them as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). If you are configuring the system, keep the airflow in mind when routing the cables. The following data cables (with their serverboard connector locations noted) should be connected. See the serverboard layout diagram in this chapter for connector locations.

- DVD-ROM drive cable (IDE#1)
- Control Panel cable (JF1, see next page)
- SAS cables (SAS0-3, SAS4-7)
- USB cable (JUSB2)
- COM port cable (COM2)

Connecting Power Cables

The X7DB3 has a 24-pin primary power supply connector designated "JPW1" for connection to the ATX power supply. Connect the appropriate connector from the power supply to JPW1 to supply power to the serverboard. See the Connector Definitions section in this chapter for power connector pin definitions.
In addition, your power supply must be connected to the 4-pin Auxiliary ATX Power connection at JPW2 and the 8-pin Processor Power connector at JPW3.

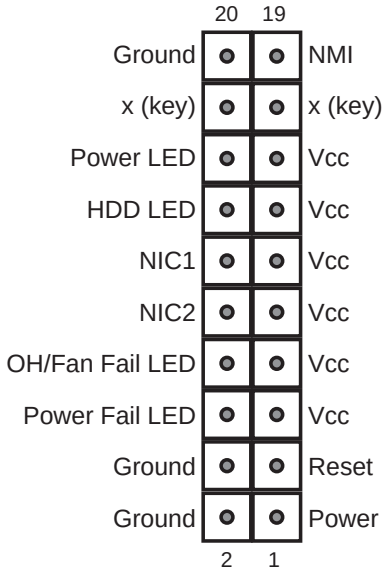
Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin locations of the various front control panel buttons and LED indicators. Please note that even and odd numbered pins are on opposite sides of each header.

All JF1 wires have been bundled into single keyed ribbon cable to simplify their connection. The red wire in the ribbon cable plugs into pin 1 of JF1. Connect the other end of the cable to the Control Panel printed circuit board, located just behind the system status LEDs in the chassis.

See the Connector Definitions section in this chapter for details and pin descriptions of JF1.

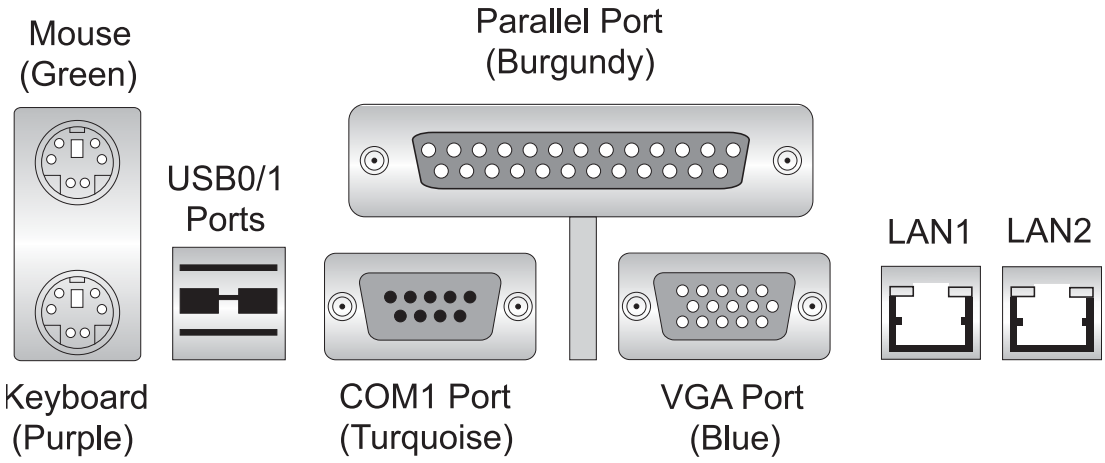
Figure 5-1. Front Control Panel Header Pins (JF1)



5-4 I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 5-2 below for the colors and locations of the various I/O ports.

Figure 5-2. Rear Panel I/O Ports



5-5 Installing Memory

CAUTION

Exercise extreme care when installing or removing DIMM modules to prevent any possible damage. Also note that the memory is interleaved to improve performance (see step 1).

DIMM Installation (See Figure 5-5)

1. Insert the desired number of DIMMs into the memory slots, starting with DIMM#1A and DIMM#2A and so on. The memory scheme is interleaved so you must install two modules at a time. See the memory installation table on the next page for the correct order in populating the DIMM slots.

2. Insert each DIMM module vertically into its slot. Pay attention to the notch along the bottom of the module to prevent inserting the DIMM module incorrectly.

3. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all modules (see step 1 above).

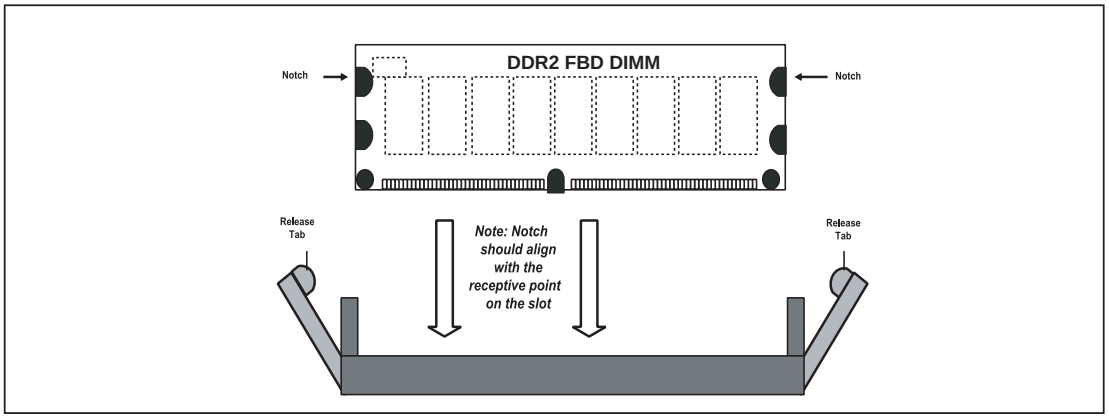
Memory Support

The X7DB3 supports up to 32 GB of ECC FBD (Fully Buffered DIMMs) DDR2-667 or DDR2-533 SDRAM. The memory is an interleaved configuration, which requires modules of the same size and speed to be installed in pairs. You should not mix DIMMs of different sizes and speeds. See Figure 5-3 for installing and removing memory modules.

Memory Installation Table								
	Branch0				Branch1			
Number of DIMMs	Bank 1 (Channel 0)		Bank 2 (Channel 1)		Bank 3 (Channel 2)		Bank 4 (Channel 3)	
2 DIMMs	1A	------	2A	------	------	------	------	------
4 DIMMs	1A	------	2A	------	3A	------	4A	------
8 DIMMs	1A	1B	2A	2B	3A	3B	4A	4B

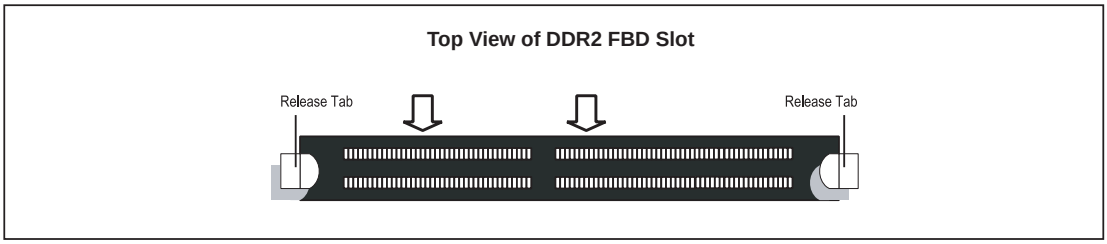
Notes: **1.** DIMM slot# specified = DIMM slot to be populated; "---" = DIMM slot to be left unpopulated. **2.** Both FBD 533 MHz and 667MHz DIMMs are supported, however you need to use memory modules of the same speed and type. **3.** Interleaved memory is supported when pairs of DIMM modules are installed in both Branch 0 and Branch 1. Interleaved memory is not available if only 2 DIMMs are installed on the motherboard.

Figure 5-3a. Installing DIMM into Slot



To Install: Insert module vertically and press down until it snaps into place. Pay attention to the bottom notch.
To Remove: Use your thumbs to gently push each release tab outward to free the DIMM from the slot.

Figure 5-3b. Top View of DDR Slot



5-6 Adding PCI Cards

1. PCI Expansion Slots

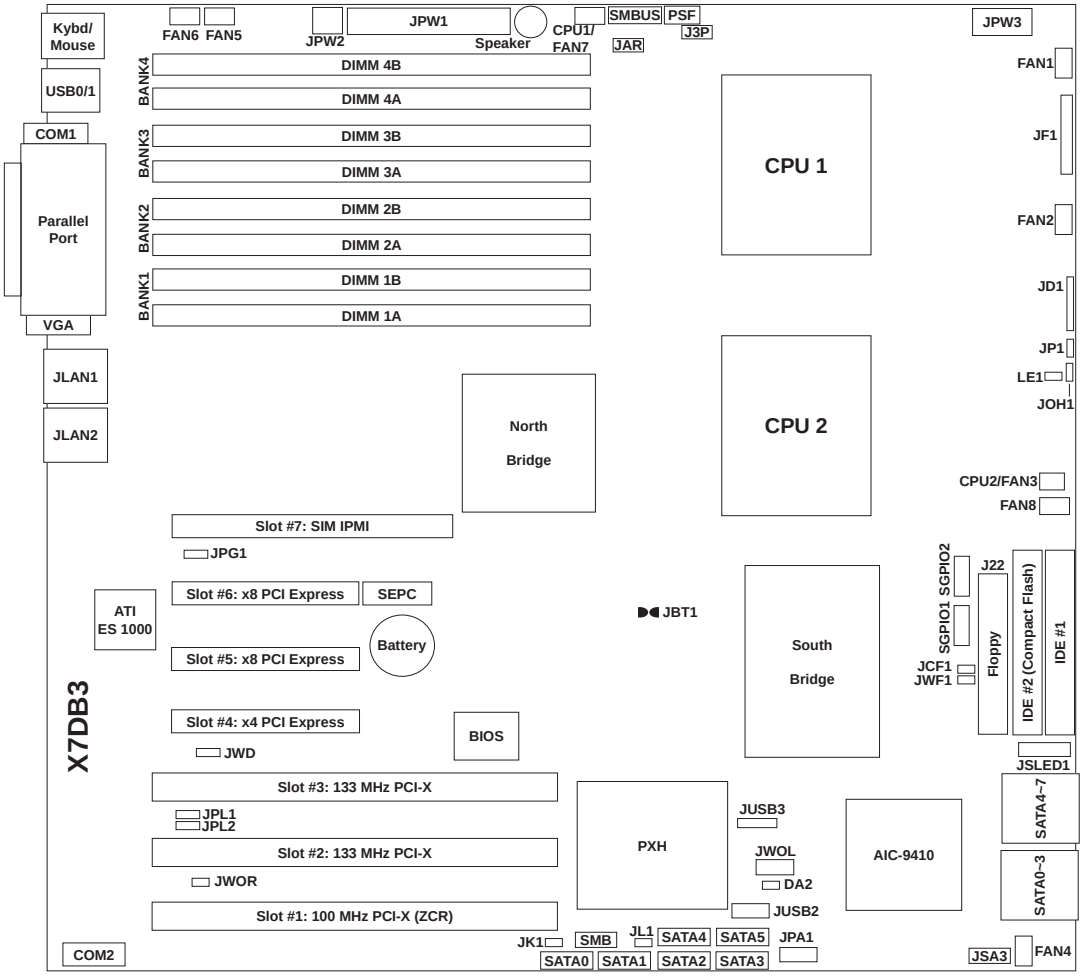
The X7DB3 has six PCI expansion slots, which includes two x8 PCI-Express slots, one x4 PCI-Express slot, two PCI-X 133 MHz slots and one PCI-X 100 MHz slot. The SC825TQ-560LP/SC825TQ-R700LP chassis can accommodate up to seven low-profile PCI expansion cards. PCI cards are installed directly to the serverboard (riser cards are not needed).

2. PCI Card Installation

Before installing a PCI add-on card, make sure you install it into a slot that supports the speed of the card (see step 1, above). Begin by removing the screw that secures the PCI slot shield to the chassis. Insert the expansion card into the correct slot on the serverboard, pushing down with your thumbs evenly on both sides of the card. Finish by securing it to the IO backplane with the screw you removed from the shield. Follow this procedure when adding a card to other slots.

5-7 Serverboard Details

Figure 5-4. X7DB3 Layout
(not drawn to scale)



Notes:

Jumpers not noted are for test purposes only.

The IDE#2 slot is for Compact Flash card use only. To use, close jumper JCF1 and connect the compact flash power to JWF1.

X7DB3 Quick Reference

Jumper	Description	Default Setting
J3P	3rd Power Fail Detect	Open (Disabled)
JBT1	CMOS Clear	(See Section 5-9)
JCF1	Compact Flash Master/Slave Select	Closed (Master)
JPG1	VGA Enable/Disable	Pins 1-2 (Enabled)
JPL1/ JPL2	JLAN1/JLAN2 Enable/Disable	Pins 1-2 (Enabled)
JWD	Watch Dog	Pins 1-2 (Reset)

Connector	Description
COM1/COM2	COM1/COM2 Serial Port Connector/Header
FAN 1-8	Fan Headers 1-8
IDE#1	IDE Hard Drive Connector
IDE#2	Compact Flash Card Connector
J7	BIOS Recovery
J22	Floppy Disk Drive Connector
JAR	Alarm Reset
JD1	Power LED (pins1-3)/Speaker Header (pins 4-7)
JF1	Front Control Panel Connector
JK1	Keylock Header
JL1	Chassis Intrusion Header
JLAN1/2	Gigabit Ethernet Ports
JOH1	Overheat LED
JPW1	Primary 24-Pin ATX Power Connector
JPW2	Auxiliary Power Connector
JPW3	Processor Power Connector
JUSB2/JUSB3	Extra USB Headers (JUSB2/3 and JUSB4)
JWF1	Compact Flash Card Power Connector
JWOL	Wake-on-LAN Header
JWOR	Wake-on-Ring Header
PSF	Power Supply Fail Header
Parallel	Parallel (Printer) Port
SATA0-SATA5	Intel SATA Ports
SAS0~3, SAS4~7	SAS 0~3, SAS 4~7 Ports
SGPIO1/SGPIO2	SGPIO Headers
SIM IPMI (Slot 7)	IPMI Connector
SMB	System Management Bus Header
SMBUS	System Management (I^2C) Power Header
USB0/1	USB Ports

5-8 Connector Definitions

ATX Power Connector

The primary ATX power supply connector meets the SSI (Superset ATX) 24-pin specification. Make sure that the orientation of the connector is correct. See the table on the right for pin definitions.

ATX Power 24-pin Connector Pin Definitions (JPW1)

Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

Auxiliary Power Connector

In addition to the Primary ATX power connector (above), the Auxiliary 4-pin connector at JPW2 must also be connected to your power supply. See the table on the right for pin definitions.

+12V 4-pin Aux. Power Pin Definitions (JPW2)

Pins	Definition
1 & 2	Ground
3 & 4	+12V

Processor Power Connector

JPW3 must also be connected to the power supply to provide power for the processor(s). See the table on the right for pin definitions.

Processor Power Pin Definitions (JPW3)

Pins	Definition
1 through 4	Ground
5 through 8	+12V

NMI Button

The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitions.

NMI Button Pin Definitions (JF1)

Pin#	Definition
19	Control
20	Ground

Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

Power LED Pin Definitions (JF1)

Pin#	Definition
15	Vcc
16	Control

HDD LED

The HDD (IDE Hard Disk Drive) LED connection is located on pins 13 and 14 of JF1. Attach the IDE hard drive LED cable to display disk activity. Refer to the table on the right for pin definitions.

HDD LED Pin Definitions (JF1)	
Pin#	Definition
13	Vcc
14	HD Active

NIC1 LED

The NIC1 (Network Interface Controller) LED connection is located on pins 11 and 12 of JF1. Attach the NIC1 LED cable to display network activity. Refer to the table on the right for pin definitions.

NIC1 LED Pin Definitions (JF1)	
Pin#	Definition
11	Vcc
12	Ground

NIC2 LED

The NIC2 (Network Interface Controller) LED connection is located on pins 9 and 10 of JF1. Attach the NIC2 LED cable to display network activity. Refer to the table on the right for pin definitions.

NIC2 LED Pin Definitions (JF1)	
Pin#	Definition
9	Vcc
10	Ground

Overheat/Fan Fail LED (OH)

Connect an LED to the OH connection on pins 7 and 8 of JF1 to provide advanced warning of chassis overheating or fan fail. Refer to the table on the right for pin definitions.

OH/Fan Fail LED Pin Definitions (JF1)	
Pin#	Definition
7	Vcc
8	Ground

Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions.

Power Fail LED Pin Definitions (JF1)

Pin#	Definition
5	Vcc
6	Ground

Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to the hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

Reset Button Pin Definitions (JF1)

Pin#	Definition
3	Reset
4	Ground

Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (see the Power Button Mode setting in BIOS). To turn off the power when set to suspend mode, depress the button for at least 4 seconds. Refer to the table on the right for pin definitions.

Power Button Pin Definitions (JF1)

Pin#	Definition
1	PW_ON
2	Ground

Universal Serial Bus (USB0/1)

Two Universal Serial Bus ports are located on the IO backplane. USB0 is the bottom connector and USB1 is the top connector. See the table on the right for pin definitions.

Universal Serial Bus Pin Definitions (USB0/1)

USB0		USB1	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	N/A	5	Key

Serial Ports

The COM1 serial port is located on the IO backplane. COM2 is a header on the serverboard (see serverboard layout for location). See the table on the right for pin definitions.

Serial Port Pin Definitions (COM1/COM2)

Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

Note: Pin 10 is included on the header but not on the port. NC indicates no connection.

Power Fail Header

Connect a cable from your power supply to the Power Fail header to provide you with warning of a power supply failure. The warning signal is passed through the PWR_LED pin to indicate a power failure. See the table on the right for pin definitions. **Note:** this header is unused on the 6025B-3, which has only a single power supply module.

Power Fail Header Pin Definitions (PSF)

Pin#	Definition
1	P/S 1 Fail Signal
2	P/S 2 Fail Signal
3	P/S 3 Fail Signal
4	Alarm Reset

Fan Headers

The X7DB3 has five fan headers, designated Fan1 through Fan5. Fan speed is controlled via Thermal Management with a BIOS setting. See the table on the right for pin definitions.

Fan Header Pin Definitions (Fan1-5)

Pin#	Definition
1	Ground (Black)
2	+12V (Red)
3	Tachometer
4	PWM Control

Chassis Intrusion

A Chassis Intrusion header is located at JL1. Attach the appropriate cable to inform you of a chassis intrusion.

Chassis Intrusion Pin Definitions (JL1)

Pin#	Definition
1	Intrusion Input
2	Ground

Extra Universal Serial Bus Headers

Three additional USB headers (USB2/3 and USB4) are included on the serverboard. These may be used for front side access. A USB cable (not included) is needed for the connection. See the table on the right for pin definitions.

Front Panel Universal Serial Bus Pin Definitions (JUSB2/JUSB3)

USB2		USB3, USB4	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	Key	5	NC

Power LED/Speaker

On the JD1 header, pins 1-3 are for a power LED, pins 4-7 are for the speaker. See the table on the right for speaker pin definitions. **Note**: The speaker connector pins are for use with an external speaker. If you wish to use the onboard speaker, you should close pins 6-7 with a jumper.

Speaker Connector Pin Definitions (JD1)

Pin #	Function	Definition
4	+	Speaker data (red wire)
5	Key	No connection
6		Key
7		Speaker data

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse ports are located beside the USB ports. See the table on the right for pin definitions.

PS/2 Keyboard and Mouse Ports Pin Definitions

Pin#	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

Overheat LED

Connect an LED to the JOH1 header to provide warning of a chassis overheating condition. See the table on the right for pin definitions.

Overheat LED Pin Definitions (JOH1)

Pin#	Definition
1	+5V
2	OH Active

Wake-On-LAN

The Wake-On-LAN header is designated JWOL. See the table on the right for pin definitions. You must enable the LAN Wake-Up setting in BIOS to use this feature. You must also have a LAN card with a Wake-on-LAN connector and cable.

Wake-On-LAN Pin Definitions (JWOL)

Pin#	Definition
1	+5V Standby
2	Ground
3	Wake-up

Wake-On-Ring

The Wake-On-Ring header is designated JWOR. This function allows your computer to receive and "wake-up" by an incoming call to the modem when in suspend state. See the table on the right for pin definitions. You must have a WOR card and cable to use this feature.

Wake-On-Ring Pin Definitions (JWOR)

Pin#	Definition
1	Ground (Black)
2	Wake-up

SMBUS

The System Management Bus header (for the PCI bus) designated SMBUS is located near the CPU1 Fan header. Connect the appropriate cable here to utilize SMB on your system. See the table on the right for pin definitions.

SMB Header Pin Definitions (SMBUS)

Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

SMB (I^2C)

The SMB header is for I^2C, which may be used to monitor the status of the power supply. See the table on the right for pin definitions.

SMB (I^2C) Pin Definitions (SMB)

Pin#	Definition
1	Clock
2	SMB Data
3	N/A
4	N/A
5	N/A

SGPIO

The two headers labeled SGPIO1 and SGPIO2 are for SGPIO (Serial General Purpose Input/Output). SGPIO provides a bus between the SATA controller and the SAS drive backplane to provide SAS enclosure management functions. Connect the appropriate cables from the backplane to the SGPIO1 and SGPIO2 headers to utilize SAS management functions on your system.

SGPIO Header Pin Definitions (SGPIO1, SGPIO2)

Pin#	Definition	Pin #	Definition
1	NC	2	NC
3	Ground	4	Data
5	Load	6	Ground
7	NC	8	NC

Note: NC indicates no connection.

JLAN1/2 (Ethernet Ports)

Two Ethernet ports (designated JLAN1 and JLAN2) are located beside the VGA port on the I/O backplane. These ports accept RJ45 type cables.

Alarm Reset (JAR)

The system will notify you in the event of a power supply failure. This feature assumes that redundant power supply units are installed in the chassis. Connect a microswitch to the JAR header to disable the power supply fail alarm. **Note:** this header is unused on the 6025B-3, which has only a single power supply module.

Alarm Reset Pin Definitions (JAR)

Pin#	Definition
2	+5V
1	Ground

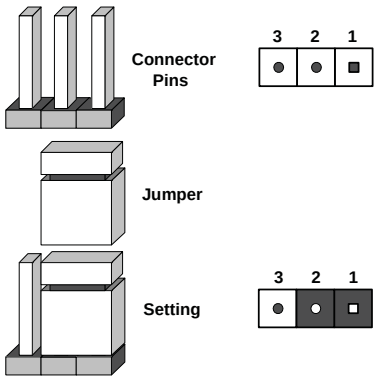
Keylock

The keyboard lock connector is designated JK1. Utilizing this header allows you to inhibit any actions made on the keyboard, effectively "locking" it.

5-9 Jumper Settings

Explanation of Jumpers

To modify the operation of the serverboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the diagram at right for an example of jumping pins 1 and 2. Refer to the serverboard layout page for jumper locations.



Note: On two-pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.

CMOS Clear

JBT1 is used to clear CMOS and will also clear any passwords. Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

To clear CMOS,

1) First power down the system and unplug the power cord(s)
2) With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver
3) Remove the screwdriver (or shorting device)
4) Reconnect the power cord(s) and power on the system.

Note: *Do not use the PW_ON connector to clear CMOS.*

VGA Enable/Disable

JPG1 allows you to enable or disable the VGA port. The default position is on pins 1 and 2 to enable VGA. See the table on the right for jumper settings.

VGA Enable/Disable Jumper Settings (JPG1)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

3rd Power Supply Fail Detect Enable/Disable

The system can notify you in the event of a power supply failure. This feature assumes that three power supply units are installed in the chassis with one acting as a backup. If you only have one or two power supply units installed, you should disable this (the default setting) with J3P to prevent false alarms. See the table on right for jumper settings.

Note: JP10 should be disabled on the 6025B-3, which has only a single power supply.

3rd Power Supply Fail Detect Enable/Disable Jumper Settings (J3P)

Jumper Setting	Definition
Open	Disabled
Closed	Enabled

JLAN Enable/Disable

Change the setting of jumper JPL1 or JPL2 to enable or disable the onboard LAN ports JLAN1 and JLAN2, respectively. See the table on the right for jumper settings. The default setting is enabled

JLAN Enable/Disable Jumper Settings (JPL1, JPL2)

Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

Compact Flash Master/ Slave

The JCF1 jumper allows you to assign either master or slave status to the compact flash card. See the table on the right for jumper settings.

Compact Flash Master/Slave Jumper Settings (JCF1)

Jumper Setting	Definition
Closed	Master
Open	Slave

Watch Dog Enable/Disable

JWD controls the Watch Dog function. Watch Dog is a system monitor that can reboot the system when a software application is "hung up". Pins 1-2 will cause WD to reset the system if an application is hung up. Pins 2-3 will generate a non-maskable interrupt signal for the application that is hung up. See the table on the right for jumper settings. Watch Dog must also be enabled in BIOS.

Note: When enabled, the user needs to write their own application software to disable the Watch Dog Timer.

Watch Dog Jumper Settings (JWD)

Jumper Setting	Definition
Pins 1-2	Reset
Pins 2-3	NMI
Open	Disabled

5-10 Onboard Indicators

JLAN1/JLAN2 LEDs

The Ethernet ports (located beside the VGA port) have two LEDs. On each Gigabit LAN port, one LED indicates activity when blinking while the other LED may be green, amber or off to indicate the speed of the connection. See the table on the right for the functions associated with the connection speed LED.

JLAN LED (Connection Speed Indicator)

LED Color	Definition
Off	10 MHz
Green	100 MHz
Amber	1 GHz

5-11 Parallel Port, Floppy, IDE and SAS and SATA Drive Connections

Note the following when connecting the floppy and hard disk drive cables:

- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

Parallel Port Connector

The parallel (printer) port is located above the COM1 and VGA ports. See the table below for pin definitions.

Parallel (Printer) Port Pin Definitions

Pin#	Definition	Pin #	Definition
1	Strobe-	2	Auto Feed-
3	Data Bit 0	4	Error-
5	Data Bit 1	6	Init-
7	Data Bit 2	8	SLCT IN-
9	Data Bit 3	10	GND
11	Data Bit 4	12	GND
13	Data Bit 5	14	GND
15	Data Bit 6	16	GND
17	Data Bit 7	18	GND
19	ACK	20	GND
21	BUSY	22	Write Data
23	PE	24	Write Gate
25	SLCT	26	NC

Floppy Connector

The floppy connector is designated J22. See the table below for pin definitions.

Floppy Drive Connector Pin Definitions (J22)

Pin#	Definition	Pin #	Definition
1	Ground	2	FDHDIN
3	Ground	4	Reserved
5	Key	6	FDEDIN
7	Ground	8	Index
9	Ground	10	Motor Enable
11	Ground	12	Drive Select B
13	Ground	14	Drive Select B
15	Ground	16	Motor Enable
17	Ground	18	DIR
19	Ground	20	STEP
21	Ground	22	Write Data
23	Ground	24	Write Gate
25	Ground	26	Track 00
27	Ground	28	Write Protect
29	Ground	30	Read Data
31	Ground	32	Side 1 Select
33	Ground	34	Diskette

IDE Connectors

There are no jumpers to configure the onboard IDE#1 and #2 connectors. See the table on the right for pin definitions.

IDE Drive Connectors
Pin Definitions (IDE#1, IDE#2)

Pin#	Definition	Pin #	Definition
1	Reset IDE	2	Ground
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	Ground	20	Key
21	DRQ3	22	Ground
23	I/O Write	24	Ground
25	I/O Read	26	Ground
27	IOCHRDY	28	BALE
29	DACK3	30	Ground
31	IRQ14	32	IOCS16
33	Addr1	34	Ground
35	Addr0	36	Addr2
37	Chip Select 0	38	Chip Select 1
39	Activity	40	Ground

SATA Ports

There are no jumpers to configure the onboard SATA connectors. See the table on the right for pin definitions.

SATA Port Pin Definitions
(SATA0 - SATA5)

Pin #	Definition
1	Ground
2	TXP
3	TXN
4	Ground
5	RXN
6	RXP
7	Ground

SAS Ports

There are eight SAS (Serial Attached SCSI) ports (one port for SAS0-3 and one port for SAS4-7) on the serverboard. See the table on the right for pin definitions.

SAS Port Pin Definitions (SAS0-3 ~ SAS4-7)

Pin#	Definition	Pin #	Definition
A1	Ground	B1	Ground
A2	RX 0+	B2	TX 0+
A3	RX 0-	B3	TX 0-
A4	Ground	B4	Ground
A5	RX 1+	B5	TX 1+
A6	RX 1-	B6	TX 1-
A7	Ground	B7	Ground
A8	SB7	B8	SB0
A9	SB3	B9	SB1
A10	SB4	B10	SB2
A11	SB5	B11	SB6
A12	Ground	B12	Ground
A13	RX 2+	B13	TX 2+
A14	RX 2-	B14	TX 2-
A15	Ground	B15	Ground
A16	RX 3+	B16	TX 3+
A17	RX 3-	B17	TX 3-
A18	Ground	B18	Ground

Notes

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC825TQ-560LP/SC825TQ-R700LP chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

Tools Required

The only tool you will need to install components and perform maintenance is a Philips screwdriver.

6-1 Static-Sensitive Devices

Electrostatic discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from ESD damage.

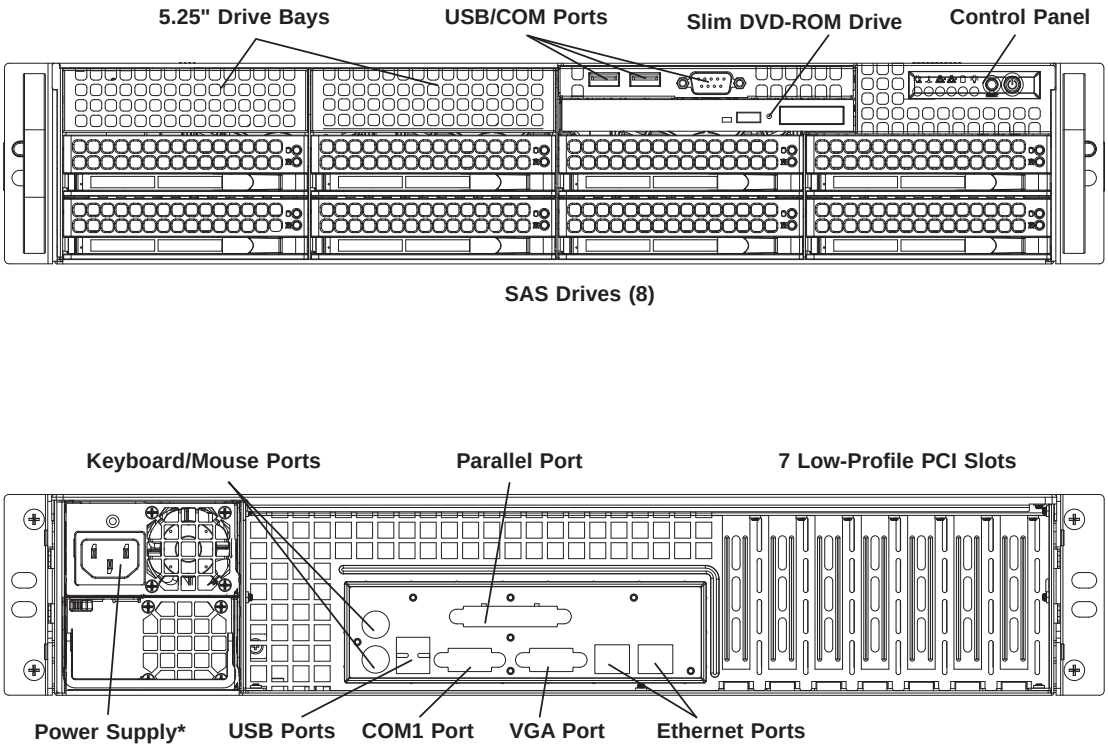
Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Unpacking

The serverboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

Figure 6-1. Front and Rear Chassis Views



***Note:** the lower (bottom) power supply module is a dummy on the 6025B-3. On the 6025B-3R, a redundant power supply module is located here.

6-2 Control Panel

The control panel (located on the front of the chassis) must be connected to the JF1 connector on the serverboard to provide you with system status indications. A ribbon cable has bundled these wires together to simplify the connection. Connect the cable from JF1 on the serverboard to JP4 on the Control Panel PCB (printed circuit board). Make sure the red wire plugs into pin 1 on both JF1 and JP4. Pull all excess cabling out of the airflow path. The LEDs inform you of system status. See Chapter 3 for details on the LEDs and the control panel buttons. Details on JF1 can be found in Chapter 5.

6-3 System Fans

Three 8-cm fans provide all the cooling needed for the Series3800/SR120R-2 (6025B-3/6025B-3R). It is very important that the chassis top cover is properly installed and making a good seal in order for the cooling air to circulate properly through the chassis and cool the components. See Figure 6-2.

System Fan Failure

Fan speed is controlled by system temperature via a BIOS setting. If a fan fails, the remaining fans will ramp up to full speed and the overheat/fan fail LED on the control panel will flash. Replace any failed fan at your earliest convenience with the same type and model (the system can continue to run with a failed fan). Remove the top chassis cover (see instructions in Chapter 2) while the system is still running to determine which of the fans has failed.

The hot-plug fan will start to function upon connection to its fan header on the serverboard.

Replacing System Fans

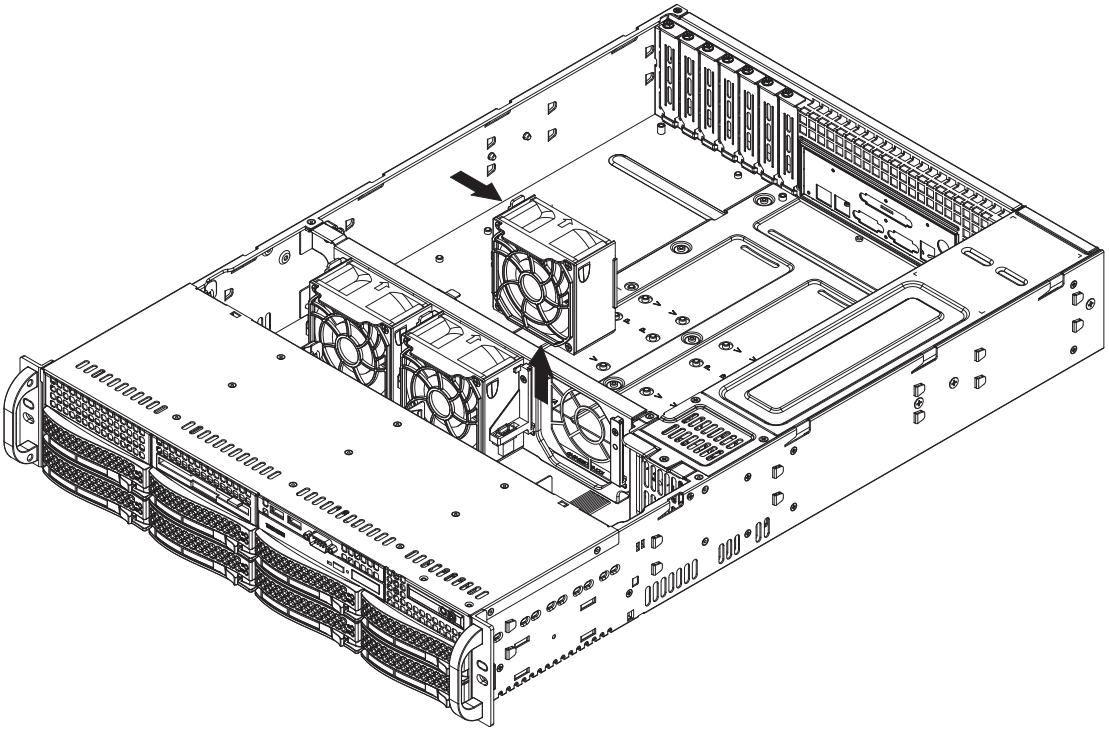
1. Removing a fan

Remove the chassis cover. Press the tabs on the top of the fan housing and remove the fan in its housing (see Figure 6-2). System power does not need to be shut down since the fans are all hot-pluggable.

2. Installing a new fan

Replace the failed fan with an identical 8-cm, 12 volt fan (p/n FAN-0070). Position the new fan at its proper place in the chassis by fitting the fan with its housing onto the fan mounts in the chassis. A "click" can be heard if the fan (in its housing) is properly installed. If the system power is on, the hot-plug feature will cause the fan to start immediately upon being connected to its header on the serverboard.

Figure 6-2. Removing a System Fan



6-4 Drive Bay Installation/Removal

Accessing the Drive Bays

SAS Drives: You do not need to access the inside of the chassis or remove power to replace or swap SAS drives. Proceed to the next step for instructions.
Note: You must use standard SAS drives in the Series3800/S120R-2 (6025B-3 /6025B-3R).

DVD-ROM/Floppy Disk Drive: For installing/removing the DVD-ROM or floppy disk drive, you will need to gain access to the inside of the server by removing the top cover of the chassis. Proceed to the "DVD-ROM and Floppy Drive Installation" section later in this chapter for instructions.

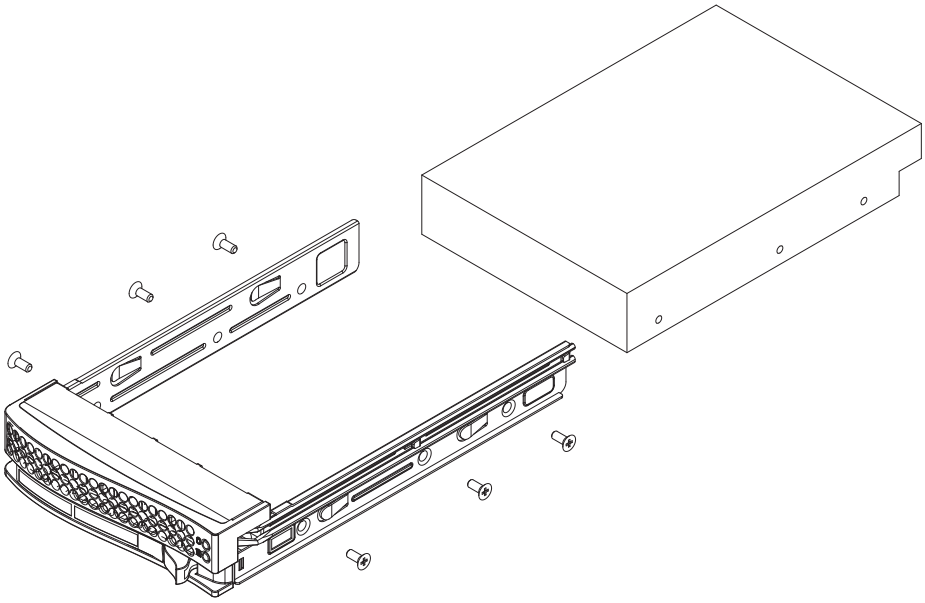
5.25" Drive Bay: For installing/removing a component in the 5.25" drive bays, proceed to the "5.25" Drive Bay Installation" section later in this chapter for instructions.

SAS Drive Installation

1. Mounting a SAS drive in a drive carrier

The SAS drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the drives. For this reason, even empty carriers without SAS drives installed must remain in the chassis. To add a new SAS drive, install a drive into the carrier with the printed circuit board side facing down so that the mounting holes align with those in the carrier. Secure the drive to the carrier with six screws, as shown in Figure 6-3.

Figure 6-3. Mounting a SAS Drive in a Carrier



Use caution when working around the SAS backplane. Do not touch the backplane with any metal objects and make sure no ribbon cables touch the backplane or obstruct the holes, which aid in proper airflow.

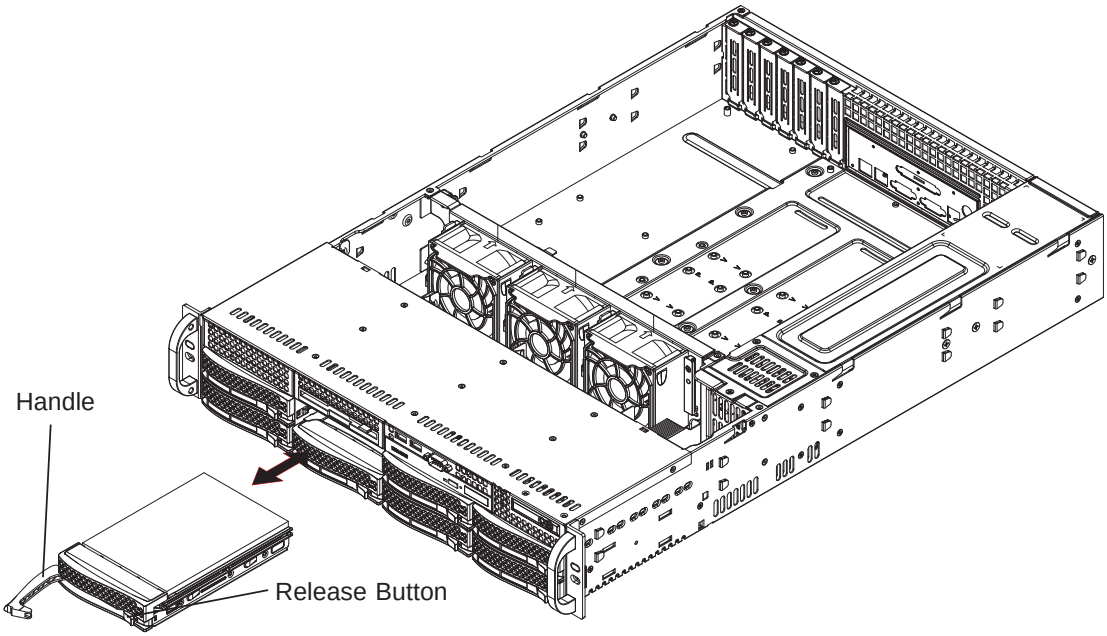
<u>Important:</u> Regardless of how many SAS hard drives are installed, all drive carriers must remain in the drive bays to maintain proper airflow.

2. Installing/removing hot-swap SAS drives

The SAS drive carriers are all easily accessible at the front of the chassis. These hard drives are hot-pluggable, meaning they can be removed and installed without powering down the system. To remove a carrier, push the release button located beside the drive LEDs. Then swing the handle fully out and use it to pull the unit straight out (see Figure 6-4).

Note: Your operating system must have RAID support to enable the hot-plug capability of the SAS drives.

Figure 6-4. Removing a SAS Drive Carrier



Important: All of the SAS drive carriers must remain in the drive bays to maintain proper cooling airflow.

Hard Drive Backplane

The SAS drives plug into a backplane that provides power, drive ID and bus termination. A RAID controller can be used with the backplane to provide data security. The operating system you use must have RAID support to enable the hot-swap capability of the SAS drives.

Installing Components in the 5.25" Drive Bays

Two 5.25" drive bays are located in the front of the chassis. Drives installed here are not connected to the SAS backplane and are not hot-swappable, meaning system power must be turned off before installing and/or removing them.

To remove the drive carrier, first power down the system and then remove the top cover of the chassis. Unscrew the retention screw at the top center of the drive, then push the drive carrier out from the back until you can grasp and pull it out through the front of the chassis. Attach the component to the carrier if installing. Then reverse the drive carrier removal procedure to install the drive, making sure you screw in the retention screw. Replace the top cover when finished.

DVD-ROM Installation

The top cover of the chassis must be opened to gain full access to the DVD-ROM drive bay. The 6025B-3/6025B-3R accomodates only slim type DVD-ROM drives. Side mounting brakets are typically needed to mount a slim DVD-ROM drive in the 6025B-3/6025B-3R server.

First, release the retention screws that secure the server unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click"). Next, depress the two buttons on the top of the chassis to release the top cover and at the same time, push the cover away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server. You must power down the system before installing or removing a DVD-ROM drive.

Drives mount on rails and should "click" into place to be correctly and fully installed in their bays. A color mark on a cable typically designates the location of pin 1.

6-5 Power Supply

6025B-3

The Series3800/S120R-2 (6025B-3) has a single 560 watt power supply, which is auto-switching capable. This enables it to automatically sense and operate with a 100v - 240v input voltage.

Power Supply Failure

If the power supply module fails, the system will shut down and you will need to replace the module. As the power supply module in the 6025B-3 is not cold-swappable, you will need to remove the chassis cover and disconnect all power cables from the power supply unit before removing and replacing the power supply.

Removing/Replacing the Power Supply

1. Removing the power supply

First unplug the power cord from the power supply module. Remove the cover from the chassis and disconnect all power cables from the motherboard and any components. Then remove the screws that secure the power module to the chassis. Finally, pull the module straight out by the handle.

2. Installing a new power supply

Replace the failed power supply with an identical power supply module (p/n PWS-561-1H). Reconnect all power cables from the power supply to the motherboard and components. Replace the chassis cover and reconnect the AC power cord. Finish by depressing the power button on the chassis front control panel to restart the system. has a single 550 watt power supply, which is auto-switching capable. This enables it to automatically sense and operate with a 100v - 240v input voltage.

6025B-3R

The Series3800/120R-2 (6025B-3R) has a 700 watt redundant power supply consisting of two power modules. Each power supply module has an auto-switching capability, which enables it to automatically sense and operate at a 100V - 240V input voltage.

Power Supply Failure

If either of the two power supply modules fail, the other module will take the full load and allow the system to continue operation without interruption. The PWR Fail LED will illuminate and remain on until the failed unit has been replaced. The power supply units have a hot-swap capability, meaning you can replace the failed unit without powering down the system.

Removing/Replacing the Power Supply

You do not need to shut down the system to replace a power supply unit. The backup power supply module will keep the system up and running while you replace the failed hot-swap unit. Replace with the same model.

1. Removing the power supply

First unplug the power cord from the failed power supply module. Then depress the locking tab on the power supply module and use the handle to pull it straight out with the rounded handle.

2. Installing a new power supply

Replace the failed hot-swap unit with another identical power supply unit (p/n PWS-702A-1R). Simply push the new power supply unit into the power bay until you hear a click. Secure the locking tab on the unit and finish by plugging the AC power cord back into the unit.

Notes

Chapter 7

BIOS

7-1 Introduction

This chapter describes the Phoenix BIOS™ Setup utility for the X7DB3. The Phoenix ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual.

System BIOS

The BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. The Phoenix BIOS stores the system parameters, types of disk drives, video displays, etc. in the CMOS. The CMOS memory requires very little electrical power. When the computer is turned off, a backup battery provides power to the CMOS Logic, enabling it to retain system parameters. Each time the computer is powered on the computer is configured with the values stored in the CMOS Logic by the system BIOS, which gains control at boot up.

How To Change the Configuration Data

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing the <Delete> key at the appropriate time during system boot. (See below.)

Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Security and Power menus. Beginning with Section 7-3, detailed descriptions are given for each parameter setting in the Setup utility.

Warning: Do not shut down or reset the system while updating BIOS to prevent possible boot failure.

7-2 Running Setup

**Default settings are in bold text unless otherwise noted.*

The BIOS setup options described in this section are selected by choosing the appropriate text from the main BIOS Setup screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options (see next page).

When you first power on the computer, the Phoenix BIOS™ is immediately activated.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Delete> immediately after turning the system on, or
2. When the message shown below appears briefly at the bottom of the screen during the POST (Power On Self-Test), press the <Delete> key to activate the main Setup menu:

Press the <Delete> key to enter Setup

7-3 Main BIOS Setup

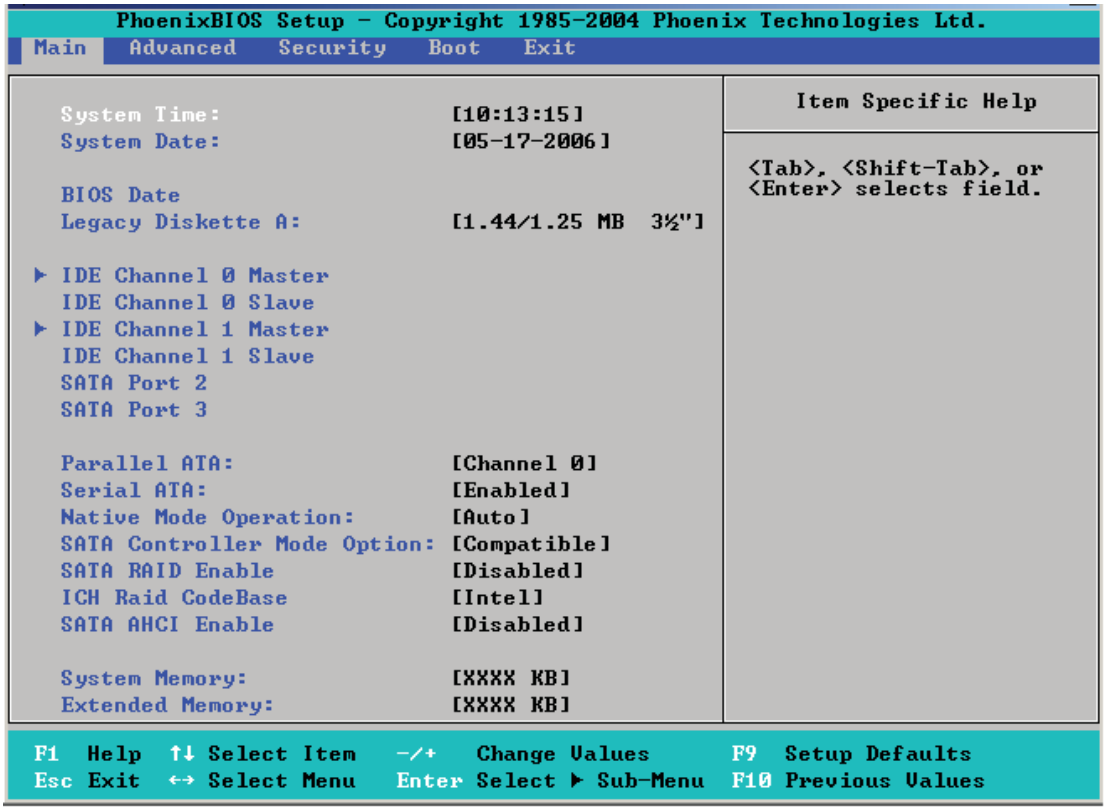
All main Setup options are described in this section. The main BIOS Setup screen is displayed below.

Use the Up/Down arrow keys to move among the different settings in each menu. Use the Left/Right arrow keys to change the options for each setting.

Press the <Esc> key to exit the CMOS Setup Menu. The next section describes in detail how to navigate through the menus.

Items that use submenus are indicated with the ▶ icon. With the item highlighted, press the <Enter> key to access the submenu.

Main BIOS Setup Menu


PhoenixBIOS Setup - Copyright 1985-2004 Phoenix Technologies Ltd.
Main Advanced Security Boot Exit
System Time: [10:13:15]
System Date: [05-17-2006]
BIOS Date
Legacy Diskette A: [1.44/1.25 MB 3½"]
IDE Channel 0 Master
IDE Channel 0 Slave
IDE Channel 1 Master
IDE Channel 1 Slave
SATA Port 2
SATA Port 3
Parallel ATA: [Channel 0]
Serial ATA: [Enabled]
Native Mode Operation: [Auto]
SATA Controller Mode Option: [Compatible]
SATA RAID Enable [Disabled]
ICH Raid CodeBase [Intel]
SATA AHCI Enable [Disabled]
System Memory: [XXXX KB]
Extended Memory: [XXXX KB]
Item Specific Help
<Tab>, <Shift-Tab>, or <Enter> selects field.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Previous Values

Main Setup Features

System Time

To set the system date and time, key in the correct information in the appropriate fields. Then press the <Enter> key to save the data.

System Date

Using the arrow keys, highlight the month, day and year fields, and enter the correct data. Press the <Enter> key to save the data.

BIOS Date

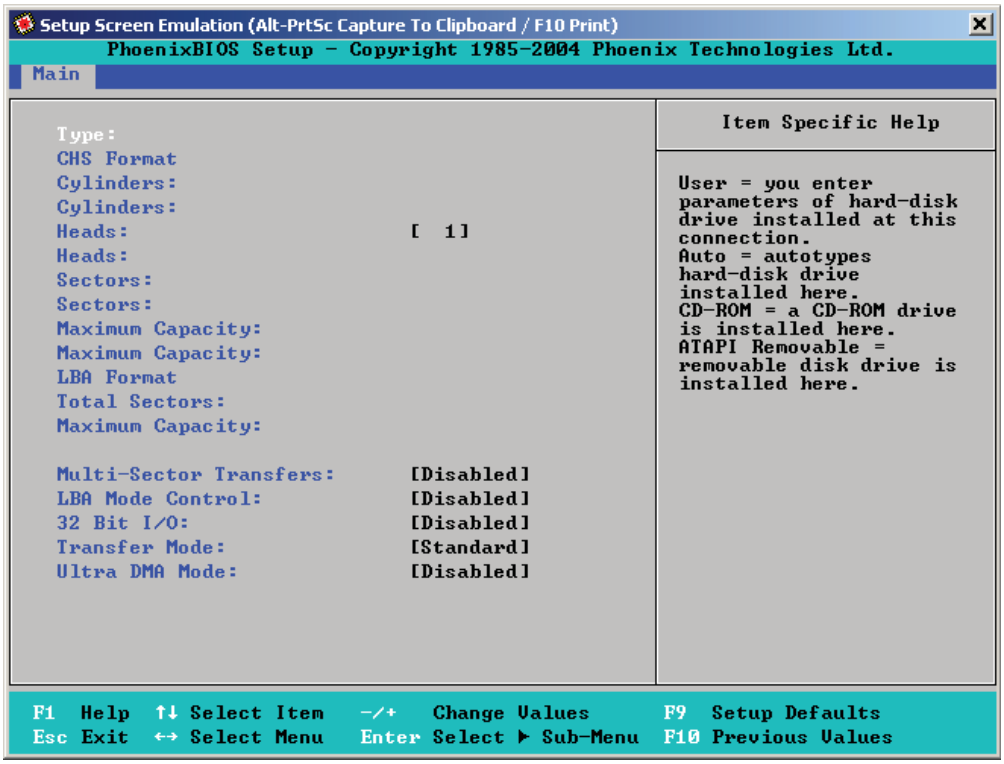
This field displays the date when this version of BIOS was built.

Legacy Diskette A

This setting allows the user to set the type of floppy disk drive installed as diskette A. The options are Disabled, 360Kb 5.25 in, 1.2MB 5.25 in, 720Kb 3.5 in, **1.44/1.25MB**, 3.5 in and 2.88MB 3.5 in.

▶IDE Channel 0 Master/Slave, IDE Channel 1 Master/Slave, SATA Port2 and SATA Port3

These settings allow the user to set the parameters of IDE Channel 0 Master/ Slave, IDE Channel 1 Master/Slave, IDE Channel 2 Master, IDE Channel 3 Master slots. Hit <Enter> to activate the following sub-menu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the sub-menu are:


Setup Screen Emulation (Alt-PrtSc Capture To Clipboard / F10 Print)
PhoenixBIOS Setup - Copyright 1985-2004 Phoenix Technologies Ltd.
Main
Type:
CHS Format
Cylinders:
Cylinders:
Heads: [1]
Heads:
Sectors:
Sectors:
Maximum Capacity:
Maximum Capacity:
LBA Format
Total Sectors:
Maximum Capacity:
Multi-Sector Transfers: [Disabled]
LBA Mode Control: [Disabled]
32 Bit I/O: [Disabled]
Transfer Mode: [Standard]
Ultra DMA Mode: [Disabled]
Item Specific Help
User = you enter parameters of hard-disk drive installed at this connection.
Auto = autotypes hard-disk drive installed here.
CD-ROM = a CD-ROM drive is installed here.
ATAPI Removable = removable disk drive is installed here.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Previous Values

Type

Selects the type of IDE hard drive. The options are **Auto**, (which allows the BIOS to automatically determine the hard drive's capacity, number of heads, etc.), a number from 1-39 to select a predetermined type of hard drive, CDROM and ATAPI Removable. The option "User" will allow the user to enter the parameters of the HDD installed at this connection. The option "Auto" will allow the BIOS to automatically configure the parameters of the HDD installed at the connection. Choose the option 1-39 to select a predetermined HDD type. Select CDROM if a CDROM drive is installed. Select ATAPI if a removable disk drive is installed.

CHS Format

The following items will be displayed by the BIOS:

TYPE: This item displays the type of IDE or SATA Device.

Cylinders: This item indicates the status of Cylinders.

Headers: This item indicates the number of headers.

Sectors: This item displays the number of sectors.

Maximum Capacity: This item displays the maximum storage capacity of the system.

LBA Format

The following items will be displayed by the BIOS:

Total Sectors: This item displays the number of total sectors available in the LBA Format.

Maximum Capacity: This item displays the maximum capacity in the LBA Format.

Multi-Sector Transfers

This item allows the user to specify the number of sectors per block to be used in multi-sector transfer. The options are **Disabled**, 4 Sectors, 8 Sectors, and 16 Sectors.

LBA Mode Control

This item determines whether the Phoenix BIOS will access the IDE Channel 0 Master Device via the LBA mode. The options are Enabled and **Disabled.**

32 Bit I/O

This option allows the user to enable or disable the function of 32-bit data transfer. The options are Enabled and **Disabled**.

Transfer Mode

This option allows the user to set the transfer mode. The options are **Standard**, Fast PIO1, Fast PIO2, Fast PIO3, Fast PIO4, FPIO3/DMA1 and FPIO4/DMA2.

Ultra DMA Mode

This option allows the user to select Ultra DMA Mode. The options are **Disabled**, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4, and Mode 5.

Parallel ATA

This setting allows the user to enable or disable the function of Parallel ATA. The options are Disabled, **Channel 0**, Channel 1, and Both.

Serial ATA

This setting allows the user to enable or disable the function of Serial ATA. The options are Disabled and **Enabled.**

Native Mode Operation

Select the native mode for ATA. The options are: Parallel ATA, Serial ATA, Both, and **Auto**.

SATA Controller Mode

Select **Compatible** to allow the SATA and PATA drives to be automatically-detected and be placed in the Legacy Mode by the BIOS. Select Enhanced to allow the SATA and PATA drives to be to be automatically-detected and be placed in the Native IDE Mode. **Note: The Enhanced mode is supported by the Windows 2000 OS or a later version.**

When the SATA Controller Mode is set to "Enhanced", the following items will display:

Serial ATA (SATA) RAID Enable

Select Enable to enable Serial ATA RAID Functions. (For a Windows OS environment, use the RAID driver if this feature is set to Enabled. When this item is set to Enabled, the item: "ICH RAID Code Base" will be available for you to select Intel firmware to be activated. If this item is set to **Disabled**, the item-SATA AHCI Enable will be available.) The options are Enabled and **Disabled**.

ICH RAID Code Base

Select Intel to enable Intel's SATA RAID firmware. The default setting is **Intel**.

SATA AHCI

Select Enable to enable the function of Serial ATA Advanced Host Interface. (Exercise caution when using this function. This feature is for advanced programmers only. The options are Enabled and **Disabled**.)

System Memory

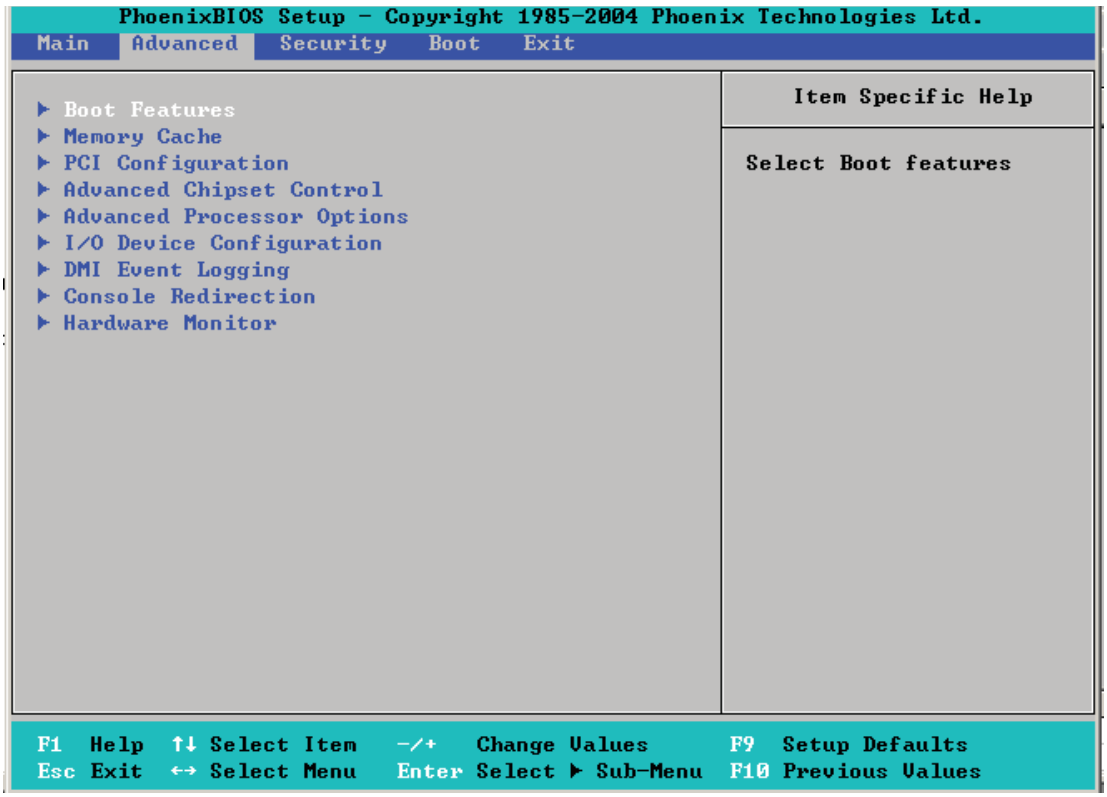
This display informs you how much system memory is recognized as being present in the system.

Extended Memory

This display informs you how much extended memory is recognized as being present in the system.

7-4 Advanced Setup

Choose Advanced from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. The items with a triangle beside them have sub menus that can be accessed by highlighting the item and pressing <Enter>.



▶Boot Features

Access the submenu to make changes to the following settings.

Quick Boot Mode

If enabled, this feature will speed up the POST (Power On Self Test) routine by skipping certain tests after the computer is turned on. The settings are **Enabled** and Disabled. If Disabled, the POST routine will run at normal speed.

Quiet Boot

This setting allows you to **Enable** or Disable the graphic logo screen during boot-up.

ACPI Mode

Use the setting to determine if you want to employ ACPI (Advanced Configuration and Power Interface) power management on your system. The options are **Yes** and No.

Power Button Behavior

If set to **Instant-Off**, the system will power off immediately as soon as the user hits the power button. If set to 4-sec., the system will power off when the user presses the power button for 4 seconds or longer. The options are instant-off and 4-sec override.

Resume On Modem Ring

Select On to “wake your system up” when an incoming call is received by your modem. The options are On and **Off**.

Power Loss Control

This setting allows you to choose how the system will react when power returns after an unexpected loss of power. The options are Stay Off, Power On, and **Last State**.

Watch Dog

If enabled, this option will automatically reset the system if the system is not active for more than 5 minutes. The options are Enabled and **Disabled**.

Summary Screen

This setting allows you to **Enable** or Disable the summary screen which displays the system configuration during bootup.

▶Memory Cache

Cache System BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a System BIOS buffer to allow the BIOS write (cache) its data into this reserved memory area. Select "**Write Protect**" to enable this function, and this area will be reserved for BIOS ROM access only. Select "Uncached" to disable this function and make this area available for other devices.

Cache Video BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a Video BIOS buffer to allow the BIOS write (cache) its data into this reserved memory area. Select "**Write Protect**" to enable the function and this area will be reserved for Video BIOS ROM access only. Select "Uncached" to disable this function and make this area available for other devices.

Cache Base 0-512K

If enabled, this feature will allow the data stored in the base memory area: block 0-512K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or to be written into the L1/L2 cache inside the CPU to speed up CPU operations. Select "Uncached" to disable this function. Select "Write Through" to allow data to be cached into the buffer and written into the system memory at the same time. Select "Write Protect" to prevent data from being written into the base memory area of Block 0-512K. Select "Write Back" to allow CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect, and **Write Back**.

Cache Base 512K-640K

If enabled, this feature will allow the data stored in the memory area: 512K-640K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or written into the L1, L2, L3 cache inside the CPU to speed up CPU operations. Select "Uncached" to disable this function. Select "Write Through" to allow data to be cached into the buffer and written into the system memory at the same time. Select "Write Protect" to prevent data from being written into the base memory area of Block 512-640K. Select "Write Back" to allow CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect, and **Write Back**.

Cache Extended Memory

If enabled, this feature will allow the data stored in the extended memory area to be cached (written) into a buffer, a storage area in the Static DROM (SDROM)

or written into the L1, L2, L3 cache inside the CPU to speed up CPU operations. Select "Uncached" to disable this function. Select "Write Through" to allow data to be cached into the buffer and written into the system memory at the same time. Select "Write Protect" to prevent data from being written into the base memory area of Block 0-512K. Select "**Write Back**" to allow CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation.

Discrete MTRR Allocation

If enabled, MTRRs (-Memory Type Range Registers) are configured as distinct, separate units and cannot be overlapped. If enabled, the user can achieve better graphic effects when using a Linux graphic driver that requires the write-combining configuration with 4GB or more memory. The options are Enabled and **Disabled**.

▶PCI Configuration

Access the submenu to make changes to the following settings for PCI devices.

Onboard GLAN1/Onboard GLAN2 (Gigabit- LAN) OPROM Configure

Enabling this option provides the capability to boot from GLAN. The options are **Disabled** and Enabled.

Onboard SCSI OPROM Configure

Enabling this option provides the capitally to boot from SCSI HDD. The options are Disabled and **Enabled**.

PCI Parity Error Forwarding

The feature allows SERR and PERR errors detected in PCI slots to be sent (forwarded) to the BIOS DMI Event Log for the user to review. The options are Enabled and **Disabled**.

Reset Configuration Data

If set to Yes, this setting clears the Extended System Configuration Data- (ESCD) area. The options are Yes and **No**.

Frequency for PCI-X#1, PCI-X#2, PCI-X#3

This option allows the user to change the bus frequency for the devices installed in the slot indicated. The options are **Auto**, PCI 33 MHz, PCI 66 MHz, PCI-X 66 MHz, PCI-X 100 MHz, and PCI-X 133 MHz.

Frequency for PCI-X#1 On Riser, Frequency for PCI-X#2-#3 On Riser **(Available when an Active Riser Card is present.)**

This option allows the user to change the bus frequency of the devices installed in the slot indicated. The options are **Auto**, PCI 33 MHz, PCI 66 MHz, PCI-X 66 MHz, PCI-X 100 MHz, and PCI-X 133 MHz.

▶Slot1 PCI-X 100 MHz ZCR, Slot2 PCI-X 133MHz, Slot3 PCI-X 133MHz, Slot4 PCI-Exp x4, Slot5 PCI-Exp x8, and Slot6 PCI-Exp x8

Access the submenu for each of the settings above to make changes to the following:

Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and Disabled.

Enable Master

This setting allows you to enable the selected device as the PCI bus master. The options are **Enabled** and Disabled.

Latency Timer

This setting allows you to set the clock rate for Bus Master. A high-priority, high-throughout device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, and 00E0h. For Unix, Novell and other Operating Systems, please select the option: other. If a drive fails after the installation of a new software, you might want to change this setting and try again. A different OS requires a different Bus Master clock rate**.**

Large Disk Access Mode

This setting determines how large hard drives are to be accessed. The options are **DOS** or Other (for Unix, Novelle NetWare and other operating systems).

▶Advanced Chipset Control

Access the submenu to make changes to the following settings.

Warning: Take Caution when changing the Advanced settings. Incorrect values entered may cause system malfunction. Also, a very high DRAM frequency or incorrect DRAM timing may cause system instability. When this occurs, revert to the default setting.

SERR Signal Condition

This setting specifies the ECC Error conditions that an SERR# is to be asserted. The options are None, **Single Bit**, Multiple Bit, and Both.

4GB PCI Hole Granularity

This feature allows you to select the granularity of PCI hole for PCI slots. If MTRRs are not enough, this option may be used to reduce MTRR occupation. The options are: **256 MB**, 512 MB, 1GB and 2GB.

Memory Branch Mode

This option determines how the two memory branches operate. System address space can either be interleaved between the two branches or Sequential from one branch to another. Mirror mode allows data correction by maintaining two copies of data in two branches. Single Channel 0 allows a single DIMM population during system manufacturing. The options are **Interleave**, Sequential, Mirroring, and Single Channel 0.

Branch 0 Rank Sparing

Select enable to enable the sparing feature for Branch 0 Rank. The options are Enabled and **Disabled**.

Branch 1 Rank Sparing

Select enable to enable the sparing feature for Branch 0 Rank. The options are Enabled and **Disabled**.

Enhanced x8 Detection

Select **Enabled** to enable Enhanced x8 DRAM UC Error Detection. The options are Disabled and **Enabled**.

Crystal Beach Features

This feature cooperates with Intel I/O AT (Acceleration Technology) to accelerate the performance of TOE devices. (Note: A TOE device is a specialized, dedicated processor that is installed on an add-on card or a network card to handle some or all packet processing of this add-on card. For the X7DB8/E, the TOE device is built inside the ESB 2 South Bridge chip.) The options are **Enabled** and Disabled.

Route Port 80h Cycles to

This feature allows the user to decide which bus to send debug information to. The options are Disabled, PCI and **LPC**.

Clock Spectrum Feature

If Enabled, the BIOS will monitor the level of Electromagnetic Interference caused by the components and will attempt to decrease the interference whenever needed. The options are Enabled and **Disabled**.

Enabling Multi-Media Timer

Select Yes to activate a set of timers that are alternative to the traditional 8254 timers for the OS use. The options are Yes and **No**.

USB Function

Select Enabled to enable the function of USB devices specified. The settings are **Enabled** and Disabled.

Legacy USB Support

This setting allows you to enable support for Legacy USB devices. The settings are **Enabled** and Disabled.

▶Advanced Processor Options

Access the submenu to make changes to the following settings.

CPU Speed

This is a display that indicates the speed of the installed processor.

Frequency Ratio (Available when supported by the CPU.)

The feature allows the user to set the internal frequency multiplier for the CPU. The options are: **Default,** x12, x13, x14, x15, x16, x17 and x18.

Hyper-threading (Available when supported by the CPU.)

Set to Enabled to use the Hyper-Threading Technology, which will result in increased CPU performance. The options are Disabled and **Enabled.**

Core-Multi-Processing (Available when supported by the CPU.)

Set to Enabled to use a processor's Second Core and beyond. (Please refer to Intel's web site for more information.) The options are Disabled and **Enabled.**

Machine Checking (Available when supported by the CPU.)

Set to Enabled to activate the function of Machine Checking and allow the CPU to detect and report hardware (machine) errors via a set of model-specific registers (MSRs). The options are Disabled and **Enabled**.

Thermal Management 2 (Available when supported by the CPU.)

Set to **Enabled** to use Thermal Management 2 (TM2) which will lower CPU voltage and frequency when the CPU temperature reaches a predefined overheat threshold. Set to Disabled to use Thermal Manager 1 (TM1), allowing CPU clocking to be regulated via CPU Internal Clock modulation when the CPU temperature reaches the overheat threshold.

C1 Enhanced Mode (Available when supported by the CPU.)

Set to Enabled to enable Enhanced Halt State to lower CPU voltage/frequency to prevent overheat. The options are Enabled and **Disabled**. (**Note:** please refer to Intel's web site for detailed information.)

No Execute Mode Memory Protection (Available when supported by the CPU and the OS.)

Set to Enabled to enable Execute Disable Bit and allow the processor to classify areas in memory where an application code can execute and where it cannot, and thus preventing a worm or a virus from inserting and creating a flood of codes to overwhelm the processor or damage the system during an attack.

(Note: this feature is available when your OS and your CPU support the function of Execute Disable Bit.) The options are **Disabled** and Enabled. (Note: For more information regarding hardware/software support for this function, please refer to Intel's and Microsoft's web sites.)

Adjacent Cache Line Prefetch (Available when supported by the CPU.)

The CPU fetches the cache line for 64 bytes if this option is set to Disabled. The CPU fetches both cache lines for 128 bytes as comprised if Enabled. The options are **Disabled** and Enabled.

Hardware Prefetch (Available when supported by the CPU.)

Set to this option to **enabled** to enable the hardware components that are used in conjunction with software programs to prefetch data in order to shorten execution cycles and maximize data processing efficiency. The options are Disabled and **Enabled**.

PECI Absent Alarm (Available when supported by the CPU.)

If set to **Enabled,** the PECI Absent Alarm will be activated if the function of PECI (Platform Environment Control Interface) is not available for the onboard process(s) or for the motherboard. The options are Disabled and **Enabled**.

Intel <R> Virtualization Technology (Available when supported by the CPU.)

Select Enabled to use the feature of Virtualization Technology to allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are Enabled and **Disabled**. (*Note: If there is any change to this setting, you will need to power off and restart the system for the change to take effect.) Please refer to Intel's web site for detailed information.

Intel EIST Support (Available when supported by the CPU.)

Select Enabled to use the Enhanced Intel SpeedStep Technology and allows the system to automatically adjust processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. The options are Enabled and **Disabled**. **Please refer to Intel's web site for detailed information.**

▶I/O Device Configuration

Access the submenu to make changes to the following settings.

KBC Clock Input

This setting allows you to select clock frequency for KBC. The options are 6MHz, 8MHz, **12MHz,** and 16MHz.

Serial Port A

This setting allows you to assign control of serial port A. The options are **Enabled** (user defined), Disabled, and Auto (BIOS- or OS- controlled).

Base I/O Address

This setting allows you to select the base I/O address for serial port A. The options are **3F8**, 2F8, 3E8, and 2E8.

Interrupt

This setting allows you to select the IRQ (interrupt request) for serial port A. The options are IRQ3 and **IRQ4**.

Serial Port B

This setting allows you to assign control of serial port B. The options are **Enabled** (user defined), Disabled, Auto (BIOS controlled) and OS Controlled.

Mode

This setting allows you to set the type of device that will be connected to serial port B. The options are **Normal** and IR (for an infrared device).

Base I/O Address

This setting allows you to select the base I/O address for serial port B. The options are 3F8, **2F8**, 3E8 and 2E8.

Interrupt

This setting allows you to select the IRQ (interrupt request) for serial port B. The options are **IRQ3** and IRQ4.

Parallel Port

This setting allows you to assign control of the parallel port. The options are **Enabled** (user defined), Disabled and Auto (BIOS-or OS- controlled).

Base I/O Address

Select the base I/O address for the parallel port. The options are **378**, 278 and 3BC.

Interrupt

This setting allows you to select the IRQ (interrupt request) for the parallel port. The options are IRQ5 and **IRQ7**.

Mode

This feature allows you to specify the parallel port mode. The options are Output only, Bi-Directional, EPP and **ECP**.

DMA Channel

This item allows you to specify the DMA channel for the parallel port. The options are DMA1 and **DMA3**.

Floppy Disk Controller

This setting allows you to assign control of the floppy disk controller. The options are **Enabled** (user defined), Disabled, and Auto (BIOS and OS controlled).

Base I/O Address

This setting allows you to select the base I/O address for the Floppy port. The options are **Primary** and Secondary.

▶DMI Event Logging

Access the submenu to make changes to the following settings.

Event Log Validity

This is a display to inform you of the event log validity. It is not a setting.

Event Log Capacity

This is a display to inform you of the event log capacity. It is not a setting.

View DMI Event Log

Highlight this item and press <Enter> to view the contents of the event log.

Event Logging

This setting allows you to **Enable** or Disable event logging.

ECC Event Logging

This setting allows you to **Enable** or Disable ECC event logging.

Mark DMI Events as Read

Highlight this item and press <Enter> to mark the DMI events as read.

Clear All DMI Event Logs

Select Yes and press <Enter> to clear all DMI event logs. The options are Yes and **No**.

▶Console Redirection

Access the submenu to make changes to the following settings.

COM Port Address

This item allows you to specify to redirect the console to Onboard COM A or Onboard COM B. This setting can also be **Disabled**.

BAUD Rate

This item allows you to select the BAUD rate for console redirection. The options are 300, 1200, 2400, 9600, **19.2K**, 38.4K, 57.6K, and 115.2K.

Console Type

This item allows you to choose from the available options to select the console type for console redirection. The options are VT100, VT100,8bit, PC-ANSI, 7bit, **PC ANSI**, VT100+, and VT-UTF8.

Flow Control

This item allows you to choose from the available options to select the flow control for console redirection. The options are: None, XON/XOFF, and **CTS/RTS**.

Console Connection

This item allows you to choose select the console connection: either **Direct** or Via Modem.

Continue CR after POST

Choose whether to continue with console redirection after the POST routine. The options are On and **Off**.

▶Hardware Monitor Logic

Note: The Phoenix BIOS will automatically detect the type of CPU(s) and hardware monitoring chip used on the motherboard and will display the Hardware Monitoring Screen accordingly. Your Hardware Monitoring Screen may look like the one shown on this page, on p. 7-19, or on p. 7-20, depending on the type of CPU(s) and HW Monitoring chip you are using.

CPU Temperature Threshold

This option allows the user to set a CPU temperature threshold that will activate the alarm system when the CPU temperature reaches this pre-set temperature threshold. The options are 70ºC, 75ºC, **80ºC** and 85ºC.

Highlight this and hit <Enter> to see monitor data for the following items:

CPU1 Temperature, CPU1 Second Core, CPU2 Temperature, CPU2 Second Core, System Temperature

Fan1-Fan8 Speeds: If the feature of Auto Fan Control is enabled, the BIOS will automatically display the status of the fans indicated in this item.

Fan Speed Control Modes

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vise versa. If the option is set to “3-pin fan”, the fan speed is controlled by voltage. If the option is set to “4-pin”, the fan speed will be controlled by Pulse Width Modulation (PWM). Select “3-pin” if your chassis came with 3-pin fan headers. Select “4-pin” if your chassis came with 4-pin fan headers. Select “Workstation” if your system is used as a Workstation. Select “Server” if your system is used as a Server. Select “Disable” to disable the fan speed control function to allow the onboard fans to run at the full speed (12V) at all the time. The Options are: **1. Disable**, 2. 3-pin (Server), 3. 3-pin (Workstation), 4. 4-pin (Server) and 5. 4-pin (Workstation).

Voltage Monitoring

The following items will be monitored and displayed:

P12V_VR0
P12V_VR1
FSB VTT
PXH Vcore
ES2B Vcore
CPU1Vcore
CPU2Vcore
P3V3

▶Hardware Monitor Logic

CPU Temperature Threshold (See note on page 7-18.)

This option allows the user to set a CPU temperature threshold that will activate the alarm system when the CPU temperature reaches this pre-set temperature threshold. The options are 70°C, 75°C, **80°C** and 85°C.

Highlight this and hit <Enter> to see monitor data for the following items:

CPU1 Temperature

CPU1 Second Core

CPU2 Temperature

CPU2 Second Core

System Temperature

Fan1-Fan8 Speeds: If the feature of Auto Fan Control is enabled, the BIOS will automatically display the status of the fans indicated in this item.

Fan Speed Control Modes

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vise versa. If the option is set to "3-pin fan", the fan speed is controlled by voltage. If the option is set to "4-pin", the fan speed will be controlled by Pulse Width Modulation (PWM). Select "3-pin" if your chassis came with 3-pin fan headers. Select "4-pin" if your chassis came with 4-pin fan headers. Select "Workstation" if your system is used as a Workstation. Select "Server" if your system is used as a Server. Select "Disable" to disable the fan speed control function to allow the onboard fans to run at the full speed (12V) at all the time. The Options are: **1. Disable**, 2. 3-pin (Server), 3. 3-pin (Workstation), 4. 4-pin (Server) and 5. 4-pin (Workstation).

Voltage Monitoring

The following items will be monitored and displayed:

Vcore A
Vcore B
-12V
P1V5
+3.3V
+12V
5Vsb
5VDD
P_VTT
Vbat

▶Hardware Monitor Logic (See note on page 7-18.)

CPU Temperature Threshold

This option allows the user to set a CPU temperature threshold that will activate the alarm system when the CPU temperature reaches this pre-set temperature threshold. The hardcode default setting is **72ºC**.

Temperature Monitoring

Highlight this and hit <Enter> to see monitor data for the following items:

PECI Agent 1 Temperature

PECI Agent 2 Temperature

PECI Agent 3 Temperature

PECI Agent 4 Temperature

System Temperature

Fan1-Fan8 Speeds: If the feature of Auto Fan Control is enabled, the BIOS will automatically display the status of the fans indicated in this item.

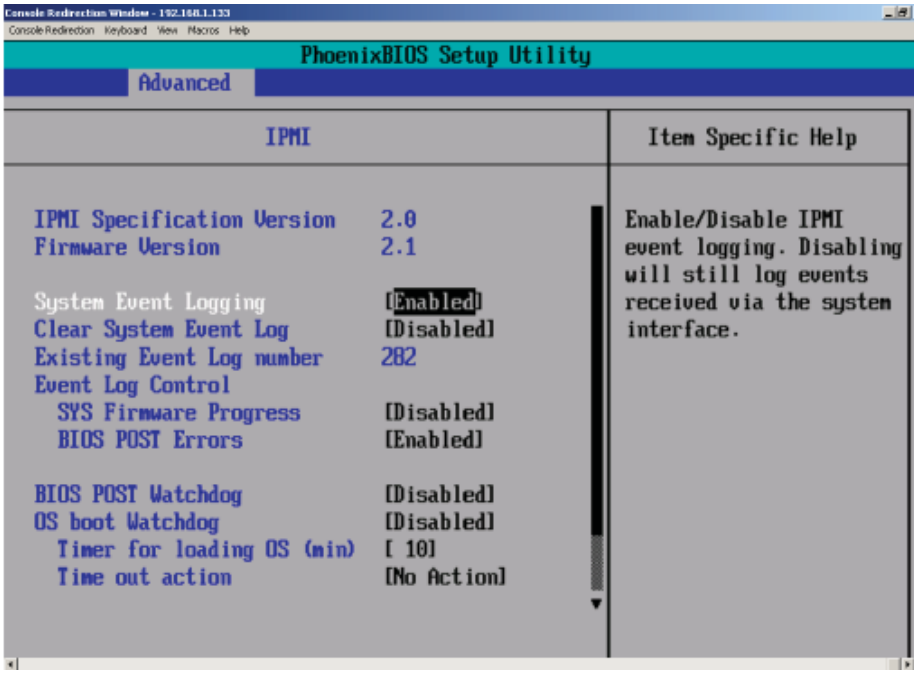
Fan Speed Control Modes

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vise versa. If the option is set to “3-pin fan”, the fan speed is controlled by voltage. If the option is set to “4-pin”, the fan speed will be controlled by Pulse Width Modulation (PWM). Select “3-pin” if your chassis came with 3-pin fan headers. Select “4-pin” if your chassis came with 4-pin fan headers. Select “Workstation” if your system is used as a Workstation. Select “Server” if your system is used as a Server. Select “Disable” to disable the fan speed control function to allow the onboard fans to run at the full speed (12V) at all the time. The Options are: **1. Disable**, 2. 3-pin (Server), 3. 3-pin (Workstation), 4. 4-pin (Server) and 5. 4-pin (Workstation).

Voltage Monitoring

The following items will be monitored and displayed:
Vcore A:
Vcore B:
-12V
P1V2_NIC_SEN
+3.3V
+12V
5Vsb
5VDD
P_VTT
Vbat

▶IPMI (The option is available only when an IPMI card is installed in the system.)


Console Redirection Window - 192.168.1.133
Console Redirection Keyboard View Macros Help
PhoenixBIOS Setup Utility
Advanced
IPMI
Item Specific Help
IPMI Specification Version 2.0
Firmware Version 2.1
System Event Logging [Enabled]
Clear System Event Log [Disabled]
Existing Event Log number 282
Event Log Control
SYS Firmware Progress [Disabled]
BIOS POST Errors [Enabled]
BIOS POST Watchdog [Disabled]
OS boot Watchdog [Disabled]
Timer for loading OS (min) [10]
Time out action [No Action]
Enable/Disable IPMI event logging. Disabling will still log events received via the system interface.

IPMI Specification Version: This item displays the current IPMI Version.

Firmware Version: This item displays the current Firmware Version.

System Event Logging

Select Enabled to enable IPMI Event Logging. When this function is set to Disabled, the system will continue to log events received via system interface. The options are **Enabled** and Disabled.

Clear System Event Logging

Enabling this function to force the BIOS to clear the system event logs during the next cold boot. The options are Enabled and **Disabled**.

Existing Event Log Number

This item displays the number of the existing event log.

Event Log Control

System Firmware Progress

Enabling this function to log POST progress. The options are Enabled and **Disabled**.

BIOS POST Errors

Enabling this function to log POST errors. The options are Enabled and **Disabled**.

BIOS POST Watch Dog

Set to Enabled to enable POST Watch Dog. The options are Enabled and **Disabled**.

OS Boot Watch Dog

Set to Enabled to enable OS Boot Watch Dog. The options are Enabled and **Disabled**.

Timer for Loading OS (Minutes)

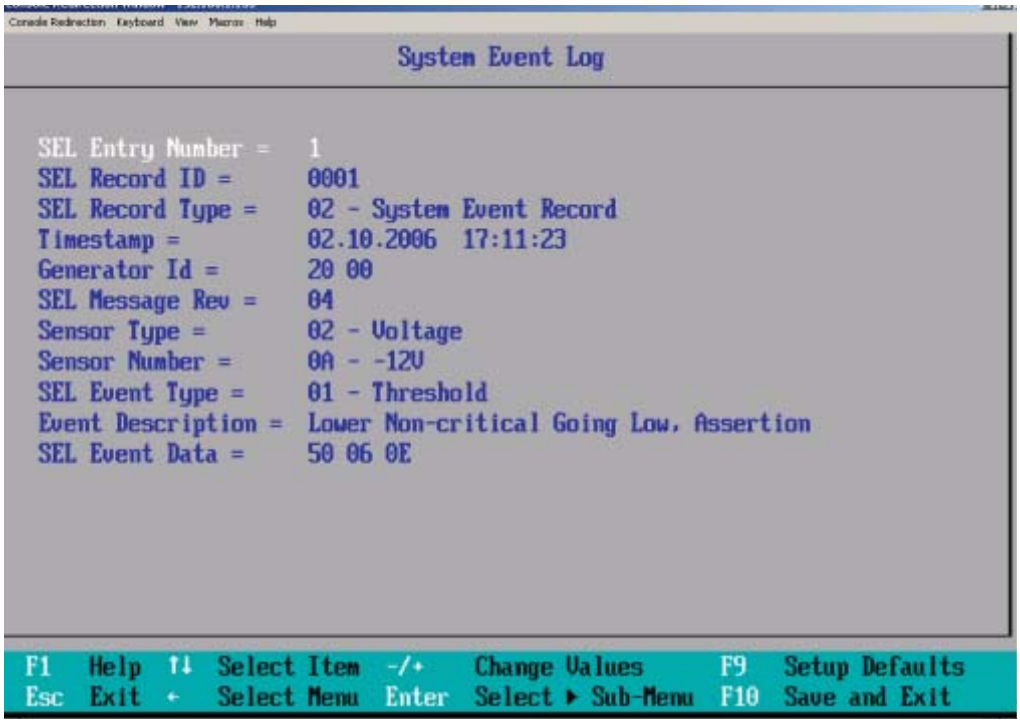
This feature allows the user to set the time value (in minutes) for the previous item: OS Boot Watch Dog by keying-in a desired number in the blank. The default setting is 10 (minutes.) (Please ignore this option when OS Boot Watch Dog is set to "Disabled".)

Time Out Option

This feature allows the user to determine what action to take in an event of a system boot failure. The options are **No Action, Reset, Power Off and Power Cycles.**

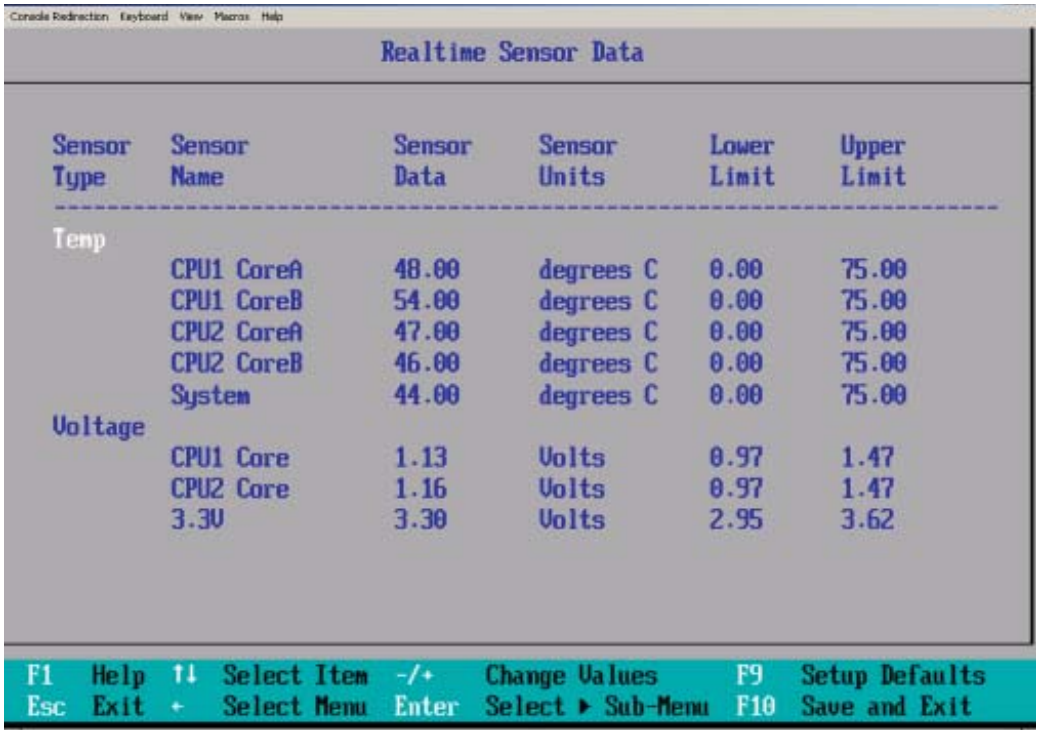
▶System Event Log/System Event Log (List Mode)

These options display the System Event (SEL) Log and System Event (SEL) Log in List Mode. Items include: SEL (System Event Log) Entry Number, SEL Record ID, SEL Record Type, Time Stamp, Generator ID, SEL Message Revision, Sensor Type, Sensor Number, SEL Event Type, Event Description, and SEL Event Data.


Console Redirection Keyboard View Macros Help
System Event Log
SEL Entry Number = 1
SEL Record ID = 0001
SEL Record Type = 02 - System Event Record
Timestamp = 02.10.2006 17:11:23
Generator Id = 20 00
SEL Message Rev = 04
Sensor Type = 02 - Voltage
Sensor Number = 0A - -12V
SEL Event Type = 01 - Threshold
Event Description = Lower Non-critical Going Low, Assertion
SEL Event Data = 50 06 0E
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ← Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

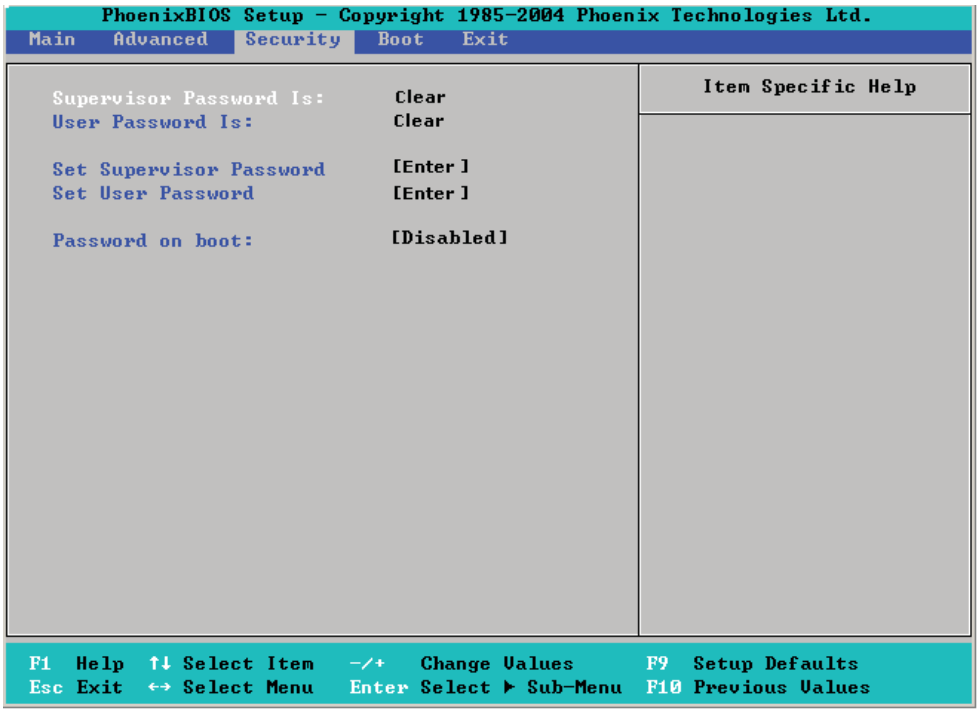
▶Realtime Sensor Data

This feature display information from motherboard sensors, such as temperatures, fan speeds and voltages of various components.


Console Redirection Keyboard View Macros Help
Realtime Sensor Data
Sensor Type
Sensor Name
Sensor Data
Sensor Units
Lower Limit
Upper Limit
Temp
CPU1 CoreA 48.00 degrees C 0.00 75.00
CPU1 CoreB 54.00 degrees C 0.00 75.00
CPU2 CoreA 47.00 degrees C 0.00 75.00
CPU2 CoreB 46.00 degrees C 0.00 75.00
System 44.00 degrees C 0.00 75.00
Voltage
CPU1 Core 1.13 Volts 0.97 1.47
CPU2 Core 1.16 Volts 0.97 1.47
3.3V 3.30 Volts 2.95 3.62
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ← Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

7-5 Security

Choose Security from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. Security setting options are displayed by highlighting the setting using the arrow keys and pressing <Enter>. All Security BIOS settings are described in this section.


PhoenixBIOS Setup - Copyright 1985-2004 Phoenix Technologies Ltd.
Main Advanced Security Boot Exit
Supervisor Password Is: Clear
User Password Is: Clear
Set Supervisor Password [Enter]
Set User Password [Enter]
Password on boot: [Disabled]
Item Specific Help
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Previous Values

Supervisor Password Is:

This displays whether a supervisor password has been entered for the system. Clear means such a password has not been used and Set means a supervisor password has been entered for the system.

User Password Is:

This displays whether a user password has been entered for the system. Clear means such a password has not been used and Set means a user password has been entered for the system.

Set Supervisor Password

When the item "Set Supervisor Password" is highlighted, hit the <Enter> key. When prompted, type the Supervisor's password in the dialogue box to set or to change supervisor's password, which allows access to the BIOS.

Set User Password

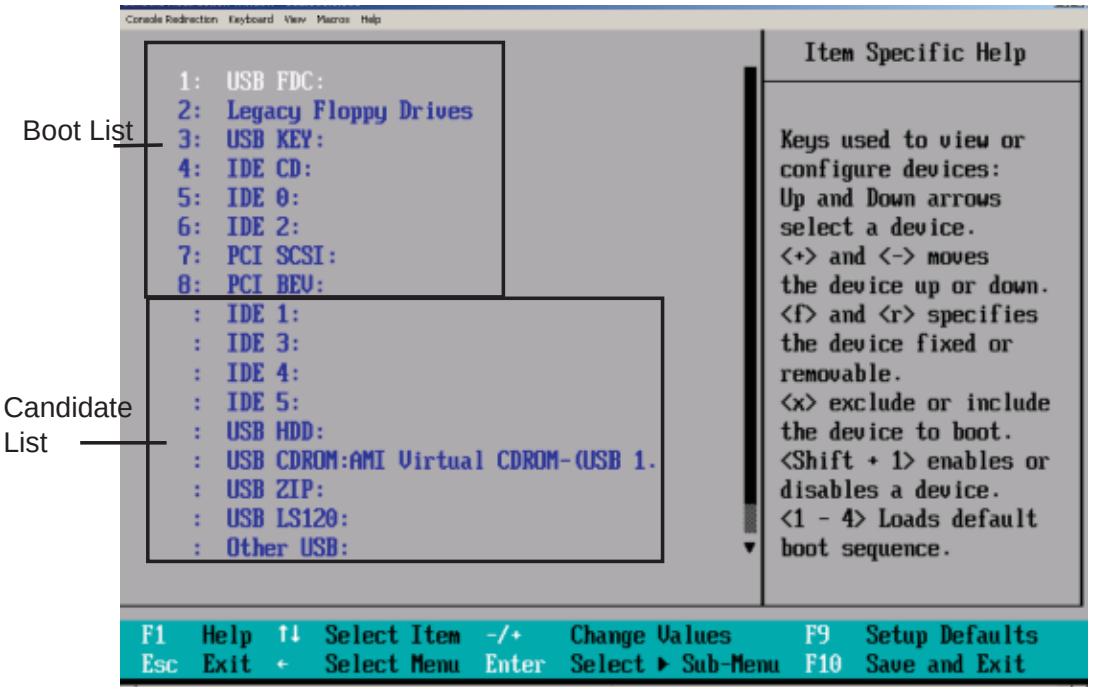
When the item "Set User Password" is highlighted, hit the <Enter> key. When prompted, type the user's password in the dialogue box to set or to change the user's password, which allows access to the system at boot-up.

Password on Boot

This setting allows you to require a password to be entered when the system boots up. The options are **Enabled** (password required) and Disabled (password not required).

7-6 Boot

Choose Boot from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. See details on how to change the order and specs of boot devices in the Item Specific Help window. All Boot BIOS settings are described in this section.

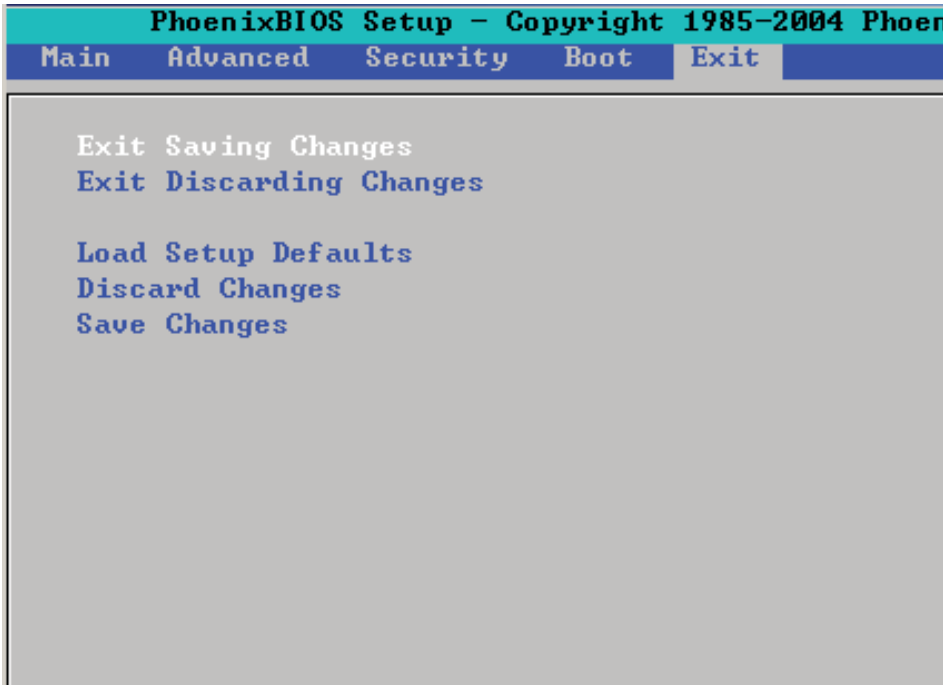

Boot List
Candidate List
1: USB FDC:
2: Legacy Floppy Drives
3: USB KEY:
4: IDE CD:
5: IDE 0:
6: IDE 2:
7: PCI SCSI:
8: PCI BEV:
: IDE 1:
: IDE 3:
: IDE 4:
: IDE 5:
: USB HDD:
: USB CDROM:AMI Virtual CDROM-(USB 1.
: USB ZIP:
: USB LS120:
: Other USB:
Item Specific Help
Keys used to view or configure devices:
Up and Down arrows select a device.
<+> and <-> moves the device up or down.
<f> and <r> specifies the device fixed or removable.
<x> exclude or include the device to boot.
<Shift + 1> enables or disables a device.
<1 - 4> Loads default boot sequence.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ← Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

Boot Priority Order/Excluded from Boot Orders

The devices included in the boot list section (above) are bootable devices listed in the sequence of boot order as specified. The boot functions for the devices included in the candidate list (above) are currently disabled. Use a <+> key or a <-> key to move the device up or down. Use the <f> key or the <r> key to specify the type of an USB device, either fixed or removable. You can select one item from the boot list and hit the <x> key to remove it from the list of bootable devices (to make its resource available for other bootable devices). Subsequently, you can select an item from the candidate list and hit the <x> key to remove it from the candidate list and put it in the boot list. This item will then become a bootable device. See details on how to change the priority of boot order of devices in the "Item Specific Help" window.

7-7 Exit

Choose Exit from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. All Exit BIOS settings are described in this section.



Exit Saving Changes

Highlight this item and hit <Enter> to save any changes you made and to exit the BIOS Setup utility.

Exit Discarding Changes

Highlight this item and hit <Enter> to exit the BIOS Setup utility without saving any changes you may have made.

Load Setup Defaults

Highlight this item and hit <Enter> to load the default settings for all items in the BIOS Setup. These are the safest settings to use.

Discard Changes

Highlight this item and hit <Enter> to discard (cancel) any changes you made. You will remain in the Setup utility.

Save Changes

Highlight this item and hit <Enter> to save any changes you made. You will remain in the Setup utility.

Appendix A

BIOS POST Messages

During the Power-On Self-Test (POST), the BIOS will check for problems. If a problem is found, the BIOS will activate an alarm or display a message. The following is a list of such BIOS messages.

Failure Fixed Disk
Fixed disk is not working or not configured properly. Check to see if fixed disk is attached properly. Run Setup. Find out if the fixed-disk type is correctly identified.

Stuck key
Stuck key on keyboard.

Keyboard error
Keyboard not working.

Keyboard Controller Failed
Keyboard controller failed test. May require replacing keyboard controller.

Keyboard locked - Unlock key switch
Unlock the system to proceed.

Monitor type does not match CMOS - Run SETUP
Monitor type not correctly identified in Setup

Shadow Ram Failed at offset: nnnn
Shadow RAM failed at offset **nnnn** of the 64k block at which the error was detected.

System RAM Failed at offset: nnnn
System RAM failed at offset **nnnn** of in the 64k block at which the error was detected.

Extended RAM Failed at offset: nnnn
Extended memory not working or not configured properly at offset **nnnn.**

System battery is dead - Replace and run SETUP
The CMOS clock battery indicator shows the battery is dead. Replace the battery and run Setup to reconfigure the system.

System CMOS checksum bad - Default configuration used

System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. The BIOS installed Default Setup Values. If you do not want these values, enter Setup and enter your own values. If the error persists, check the system battery or contact your dealer.

System timer error

The timer test failed. Requires repair of system board.

Real time clock error

Real-Time Clock fails BIOS hardware test. May require board repair.

Check date and time settings

BIOS found date or time out of range and reset the Real-Time Clock. May require setting legal date (1991-2099).

Previous boot incomplete - Default configuration used

Previous POST did not complete successfully. POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail. On systems with control of **wait states**, improper Setup settings can also terminate POST and cause this error on the next boot. Run Setup and verify that the waitstate configuration is correct. This error is cleared the next time the system is booted.

Memory Size found by POST differed from CMOS

Memory size found by POST differed from CMOS.

Diskette drive A error

Diskette drive B error

Drive A: or B: is present but fails the BIOS POST diskette tests. Check to see that the drive is defined with the proper diskette type in Setup and that the diskette drive is attached correctly.

Incorrect Drive A type - run SETUP

Type of floppy drive A: not correctly identified in Setup.

Incorrect Drive B type - run SETUP

Type of floppy drive B: not correctly identified in Setup.

System cache error - Cache disabled
RAM cache failed and BIOS disabled the cache. On older boards, check the cache jumpers. You may have to replace the cache. See your dealer. A disabled cache slows system performance considerably.

CPU ID:
CPU socket number for Multi-Processor error.

EISA CMOS not writeable
ServerBIOS2 test error: Cannot write to EISA CMOS.

DMA Test Failed
ServerBIOS2 test error: Cannot write to extended **DMA** (Direct Memory Access) registers.

Software NMI Failed
ServerBIOS2 test error: Cannot generate software NMI (Non-Maskable Interrupt).

Fail-Safe Timer NMI Failed
ServerBIOS2 test error: Fail-Safe Timer takes too long.

device Address Conflict
Address conflict for specified **device.**

Allocation Error for: device
Run ISA or EISA Configuration Utility to resolve resource conflict for the specified **device**.

CD ROM Drive
CD ROM Drive identified.

Entering SETUP ...
Starting Setup program

Failing Bits: nnnn
The hex number **nnnn** is a map of the bits at the RAM address which failed the memory test. Each 1 (one) in the map indicates a failed bit. See errors 230, 231, or 232 above for offset address of the failure in System, Extended, or Shadow memory.

Fixed Disk n
Fixed disk **n** (0-3) identified.

Invalid System Configuration Data
Problem with NVRAM (CMOS) data.

I/O device IRQ conflict
I/O device IRQ conflict error.

PS/2 Mouse Boot Summary Screen:
PS/2 Mouse installed.

nnnn kB Extended RAM Passed
Where **nnnn** is the amount of RAM in kilobytes successfully tested.

nnnn Cache SRAM Passed
Where **nnnn** is the amount of system cache in kilobytes successfully tested.

nnnn kB Shadow RAM Passed
Where **nnnn** is the amount of shadow RAM in kilobytes successfully tested.

nnnn kB System RAM Passed
Where **nnnn** is the amount of system RAM in kilobytes successfully tested.

One or more I2O Block Storage Devices were excluded from the Setup Boot Menu
There was not enough room in the IPL table to display all installed I2O block-storage devices.

Operating system not found
Operating system cannot be located on either drive A: or drive C:. Enter Setup and see if fixed disk and drive A: are properly identified.

Parity Check 1 nnnn
Parity error found in the system bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????.** Parity is a method for checking errors in binary data. A parity error indicates that some data has been corrupted.

Parity Check 2 nnnn
Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????.**

Press <F1> to resume, <F2> to Setup, <F3> for previous
Displayed after any recoverable error message. Press <F1> to start the boot process or <F2> to enter Setup and change the settings. Press <F3> to display the previous screen (usually an initialization error of an **Option ROM**, i.e., an add-on card). Write down and follow the information shown on the screen.

Press <F2> to enter Setup
Optional message displayed during POST. Can be turned off in Setup.

PS/2 Mouse:
PS/2 mouse identified.

Run the I2O Configuration Utility
One or more unclaimed block storage devices have the Configuration Request bit set in the LCT. Run an I2O Configuration Utility (e.g. the SAC utility).

System BIOS shadowed
System BIOS copied to shadow RAM.

UMB upper limit segment address: *nnnn*
Displays the address ***nnnn*** of the upper limit of **Upper Memory Blocks**, indicating released segments of the BIOS which can be reclaimed by a virtual memory manager.

Video BIOS shadowed
Video BIOS successfully copied to shadow RAM.

Notes

Appendix B

BIOS POST Codes

This section lists the POST (Power On Self Test) codes for the PhoenixBIOS. POST codes are divided into two categories: recoverable and terminal.

Recoverable POST Errors

When a recoverable type of error occurs during POST, the BIOS will display an POST code that describes the problem. BIOS may also issue one of the following beep codes:

1 long and two short beeps - video configuration error
1 repetitive long beep - no memory detected

Terminal POST Errors

If a terminal type of error occurs, BIOS will shut down the system. Before doing so, BIOS will write the error to port 80h, attempt to initialize video and write the error in the top left corner of the screen. The following is a list of codes that may be written to port 80h.

POST Code	Description
01h	IPMI Initialization
02h	Verify Real Mode
03h	Disable Non-Maskable Interrupt (NMI)
04h	Get CPU type
06h	Initialize system hardware
07h	Disable shadow and execute code from the ROM.
08h	Initialize chipset with initial POST values
09h	Set IN POST flag
0Ah	Initialize CPU registers
0Bh	Enable CPU cache
0Ch	Initialize caches to initial POST values
0Eh	Initialize I/O component
0Fh	Initialize the local bus IDE
10h	Initialize Power Management
11h	Load alternate registers with initial POST values
12h	Restore CPU control word during warm boot
13h	Reset PCI Bus Mastering devices
14h	Initialize keyboard controller
16h	1-2-2-3 BIOS ROM checksum
17h	Initialize cache before memory Auto size

POST Code	Description
18h	8254 timer initialization
1Ah	8237 DMA controller initialization
1Ch	Reset Programmable Interrupt Controller
20h	1-3-1-1 Test DRAM refresh
22h	1-3-1-3 Test 8742 Keyboard Controller
24h	Set ES segment register to 4 GB
28h	Auto size DRAM
29h	Initialize POST Memory Manager
2Ah	Clear 512 kB base RAM
2Ch	1-3-4-1 RAM failure on address line ***xxxx****
2Eh	1-3-4-3 RAM failure on data bits ***xxxx**** of low byte of memory bus
2Fh	Enable cache before system BIOS shadow
32h	Test CPU bus-clock frequency
33h	Initialize Phoenix Dispatch Manager
36h	Warm start shut down
38h	Shadow system BIOS ROM
3Ah	Auto size cache
3Ch	Advanced configuration of chipset registers
3Dh	Load alternate registers with CMOS values
41h	Initialize extended memory for RomPilot (optional)
42h	Initialize interrupt vectors
45h	POST device initialization
46h	2-1-2-3 Check ROM copyright notice
48h	Check video configuration against CMOS
49h	Initialize PCI bus and devices
4Ah	Initialize all video adapters in system
4Bh	QuietBoot start (optional)
4Ch	Shadow video BIOS ROM
4Eh	Display BIOS copyright notice
4Fh	Initialize MultiBoot
50h	Display CPU type and speed
51h	Initialize EISA board (optional)
52h	Test keyboard
54h	Set key click if enabled
55h	Enable USB devices
58h	2-2-3-1 Test for unexpected interrupts
59h	Initialize POST display service
5Ah	Display prompt “Press <ESC> to enter SETUP”
5Bh	Disable CPU cache

POST Code	Description
5Ch	Test RAM between 512 and 640 kB
60h	Test extended memory
62h	Test extended memory address lines
64h	Jump to UserPatch1
66h	Configure advanced cache registers
67h	Initialize Multi Processor APIC
68h	Enable external and CPU caches
69h	Setup System Management Mode (SMM) area
6Ah	Display external L2 cache size
6Bh	Load custom defaults (optional)
6Ch	Display shadow-area message
70h	Display error messages
72h	Check for configuration errors
76h	Check for keyboard errors
7Ch	Set up hardware interrupt vectors
7Dh	Initialize Intelligent System Monitoring (optional)
7Eh	Initialize coprocessor if present
80h	Disable onboard I/O ports and IRQs (optional)
81h	Late POST device initialization
82h	Detect and install external RS232 ports
83h	Configure non-MCD IDE controllers
84h	Detect and install external parallel ports
85h	Initialize PC-compatible PnP ISA devices
86h	Re-initialize onboard I/O ports.
87h	Configure Motherboard Configurable Devices (optional)
88h	Initialize BIOS Data Area
89h	Enable Non-Maskable Interrupts (NMIs)
8Ah	Initialize Extended BIOS Data Area
8Bh	Test and initialize PS/2 mouse
8Ch	Initialize floppy controller
8Fh	Determine number of ATA drives (optional)
90h	Initialize hard-disk controllers
91h	Initialize local-bus hard-disk controllers
92h	Jump to UserPatch2
93h	Build MPTABLE for multi-processor boards
95h	Install CD ROM for boot
96h	Clear huge ES segment register
97h	Fix up Multi Processor table
98h	1-2 Search for option ROMs and shadow if successful. One long, two short beeps on checksum failure

POST Code	Description
99h	Check for SMART Drive (optional)
9Ch	Set up Power Management
9Dh	Initialize security engine (optional)
9Eh	Enable hardware interrupts
9Fh	Determine number of ATA and SCSI drives
A0h	Set time of day
A2h	Check key lock
A4h	Initialize typematic rate
A8h	Erase <ESC> prompt
AAh	Scan for <ESC> key stroke
ACh	Enter SETUP
AEh	Clear Boot flag
B0h	Check for errors
B1h	Inform RomPilot about the end of POST (optional)
B2h	POST done - prepare to boot operating system
B4h	1 One short beep before boot
B5h	Terminate QuietBoot (optional)
B6h	Check password (optional)
B7h	Initialize ACPI BIOS and PPM Structures
B9h	Prepare Boot
BAh	Initialize SMBIOS
BCh	Clear parity checkers
BDh	Display MultiBoot menu
BEh	Clear screen (optional)
BFh	Check virus and backup reminders
C0h	Try to boot with INT 19
C1h	Initialize POST Error Manager (PEM)
C2h	Initialize error logging
C3h	Initialize error display function
C4h	Initialize system error flags
C6h	Console redirection init.
C7h	Unhook INT 10h if console redirection enabled
C8h	Force check (optional)
C9h	Extended ROM checksum (optional)
CDh	Reclaim console redirection vector

POST Code	Description
D2h	Unknown interrupt
D4h	Check Intel Branding string
D8h	Alert Standard Format initialization
D9h	Late init for IPMI
DEh	Log error if micro-code not updated properly

The following are for boot block in Flash ROM

POST Code	Description
E0h	Initialize the chipset
E1h	Initialize the bridge
E2h	Initialize the CPU
E3h	Initialize system timer
E4h	Initialize system I/O
E5h	Check force recovery boot
E6h	Checksum BIOS ROM
E7h	Go to BIOS
E8h	Set Huge Segment
E9h	Initialize Multi Processor
EAh	Initialize OEM special code
EBh	Initialize PIC and DMA
ECh	Initialize Memory type
EDh	Initialize Memory size
EEh	Shadow Boot Block
EFh	System memory test
F0h	Initialize interrupt vectors
F1h	Initialize Run Time Clock
F2h	Initialize video
F3h	Initialize System Management Manager
F4h	Output one beep
F5h	Clear Huge Segment
F6h	Boot to Mini DOS
F7h	Boot to Full DOS

If the BIOS detects error 2C, 2E, or 30 (base 512K RAM error), it displays an additional word-bitmap (***xxxx***) indicating the address line or bits that failed. For example, “2C 0002” means address line 1 (bit one set) has failed. “2E 1020" means data bits 12 and 5 (bits 12 and 5 set) have failed in the lower 16 bits. The BIOS also sends the bitmap to the port-80 LED display. It first displays the checkpoint code, followed by a delay, the high-order byte, another delay, and then the loworder byte of the error. It repeats this sequence continuously.

Notes

Appendix C
RAID and Software Installation

C-1 Adaptec SAS HostRAID

The onboard Adaptec AIC9140W SAS Controller supports two ports. Each port supports up to four SAS/SATA drives.

The SAS cable can only be used with backplanes that support both SAS and SATA.

If you want to use this motherboard with SAS Mobile Racks, such as CSE-M28E1, make sure to use Cable CBL-0116. (Note: cable CBL-0116 is a cross-over cable and is not provided with this motherboard.)

Using the Adaptec RAID Configuration Utility (ARC)

Upon detecting the SAS Controller BIOS, please make sure that the Adapter WWN address is listed. This is a 16-digit number. If this number is not shown, you will not be able to use the controller.

Once the WWN address is listed, press the <Ctrl> and <A> keys simultaneously when prompted to access the Adaptec SAS RAID BIOS. (To select an option, use the arrow keys to highlight the item and then press the <Enter> key to select it. To return to the previous menu, press the <ESC> key.)

The Adaptec RAID Configuration Utility is an embedded BIOS Utility, including:

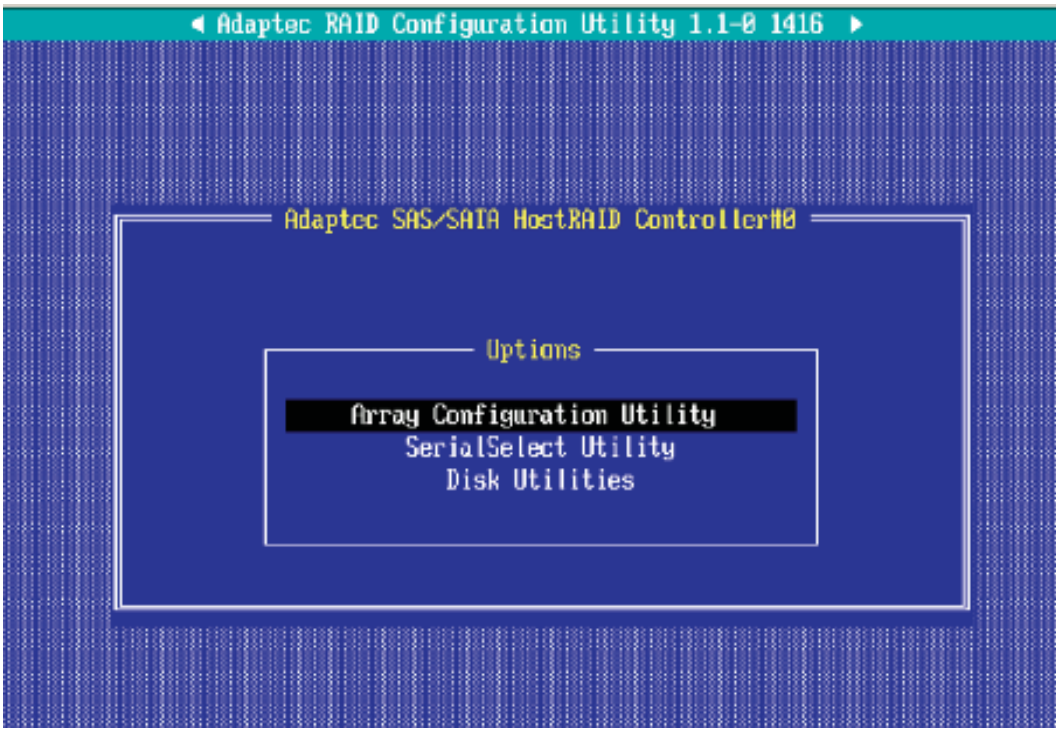
Array Configuration Utility: Use this utility when you want to create, configure and manage arrays.

SerialSelect Utility: Use this option to configure SAS/SATA RAID drives.

Disk Utilities: Use this option to format or verify disks.

Using the Array Configuration Utility (ACU)

The Array Configuration Utility (ACU) enables you to create, manage, and delete arrays from the controller's BIOS, add and delete spare drives, and initialize drives. During the system startup, press <Ctrl> and <A> key simultaneously, and the main menu will appear.



Managing Arrays

Select this option to view array properties, and delete arrays. The following sections describe the operations Of "Managing Arrays".

To select this option, use the arrow keys and the <enter> key to select "Managing Arrays" from the main menu.

Viewing Array Properties

To view the properties of an existing array:

1. At the BIOS prompt, press **Ctrl+A**.

2. From the ARC menu, select **Array Configuration Utility (ACU)**.

3. From the ACU menu, select **Manage Arrays** (as shown on the previous screen.)

4. From the List of Arrays dialog box, select the array you want to view and press **Enter**.

The Array Properties dialog box appears, showing detailed information on the array. The physical disks associated with the array are displayed here.

5. Press **Esc** to return to the previous menu.

Deleting Arrays

Warning: Back up the data on an array before you delete it to prevent the loss of data. Deleted arrays cannot be restored.

To delete an existing array:

1. Turn on your computer and press **Ctrl+A** when prompted to access the ARC utility.

2. From the ARC main menu, select **Array Configuration Utility (ACU)**.

3. From the ACU menu, select **Manage Arrays**.

4. Select the array you wish to delete and press **Delete**.

5. In the Array Properties dialog box, select **Delete** and press **Enter**. The following prompt is displayed:
Warning!! Deleting the array will render array unusable. Do you want to delete the array?(Yes/No):

***RAID 1 only*—the following prompt is also displayed:**

Deleting the partition will result in data loss! Do you also want to delete the partition? (Yes/No):

6. Press **Yes** to delete the array or partition or **No** to return to the previous menu.
7. Press **Esc** to return to the previous menu.

Creating Arrays

Before creating arrays, make sure the disks for the array are connected and installed in your system. Note that disks with no usable space, or disks that are un-initialized are shown in gray and cannot be used. See *Initializing Disk Drives*.

To create an array:

1. Turn on your computer and press **Ctrl+A** when prompted to access the ARC utility.
2. From the ARC menu, select **Array Configuration Utility Main Menu (ACU)** (as shown on the first screen on the previus page).

3. From the ACU menu, select **Create Array**.

4. Select the disks for the new array and press Insert.

Note: To deselect any disk, highlight the disk and press **Delete**.

5. Press **Enter** when both disks for the new array are selected. The Array Properties menu displays.

Assigning Array Properties

Once you've create a new array, you are ready to assign the properties to the array.

Caution: Once the array is created and its properties are assigned, you cannot change the array properties using the ACU. You will need to use the Adaptec Storage Manager - Browser Edition. (Refer to Adaptec's User's Guide in the enclosed CD.)

To assign properties to the new array:

1. In the Array Properties menu, select an array type and press **Enter**. Note that only the available array types: RAID 0, and RAID1, are displayed on the screen. (RAID 0 or RAID 1 requires two drives.)

2. Under the item "**Arrays Label**", type in an label and press **Enter**. The label shall not be more than 15 characters.

3. For RAID 0, select the desired stripe size. Available stripe sizes are 16, 32, and 64 KB-default. It is recommended that you *do not* change the default setting.)

4. The item: **"Create RAID via"** allows you to select between the different creating methods for RAID 0 and RAID 1.

The following table gives examples of when each is appropriate.

aid Level	**Create Via**	**When Appropriate**
AID 0	No Init	Creating a RAID 0 on new drives
AID 0	Migrate (*Note)	Creating a RAID 0 from one new drive and one drive with data you wish to preserve
AID 1	Build1	Any time you wish to create a RAID 1, but especially if you have data on one drive that you wish to preserve
AID 1	Clear	Creating a RAID 1 on new drives, or when you want to ensure that the array contains no data after creation.
AID 1	Quick	Fastest way to create a RAID 1. Appropriate when using new drives
AID 1	Init	

Note: If you select Migrate for RAID 0, or Build for RAID 1, you will be asked to select the source drive. The contents of the source drive will be preserved. However, the data on the new drive will be lost.

5. When you are finished, press **Done.**

Notes:

1. Before adding a new drive to an array, back up any data contained on the new drive. Otherwise, all data will be lost.

2. If you stop the Build or Clear process on a RAID 1 from ACU, you can restart it by pressing Ctrl+R.

3. A RAID 1 created using the Quick Init option may return some data miscompares if you later run a consistency check. This is normal and is not a cause for concern.

4. The ACU allows you to use drives of different sizes in a RAID . However, during a build operation, only the smaller drive can be selected as the source or first drive.

5. When migrating from single volume to RAID 0, migrating from a larger drive to a smaller drive is allowed. However, the destination drive must be at least half the capacity of the source drive.

6. Adaptec does not recommend that you migrate or build an array on Windows dynamic disks (volumes), as it will result in data loss.

Warning: Do not interrupt the creation of a RAID 0 using the Migrate option. If you do, you will not be able to restart, or to recover the data that was on the source drive.

Adding a Bootable Array

To make an array bootable:

1. From the Main menu, select **Manage Arrays.**

2. From the List of Arrays, select the array you want to make bootable, and press **Ctrl+B.**

3. Enter Y to create a bootable array when the following message is displayed: "This will make all other existing bootable array non-bootable. Do you want to make this array bootable? (Yes/No):" Then, a bootable array will be created. An asterisk will appear next to the bootable array.

Deleting a Bootable Array

To delete a bootable array:

1. From the Main menu, select **Manage Arrays.**

2. From the List of Arrays, select the bootable array (*) you want to delete, and press **Ctrl+B**. (* a bootable array is the array marked with an asterisk.)

3. Enter Y to delete a bootable array when the following message is displayed: "The array is already marked bootable. Do you want to make this array as not bootable? (Yes/No):" Then, the bootable array will be deleted and the asterisk will disappear.

Note: do not use the delete key to delete the bootable array.

Initializing Disk Drives

If an installed disk does not appear in the disk selection list for creating a new array, or if it appears grayed out, you may have to initialize it before you can use it as part of an array. Drives attached to the controller must be initialized before they can be used in an array.

Caution: Initializing a disk overwrites the partition table on the disk and makes any data on the disk inaccessible. If the drive is used in an array, you may not be able to use the array again.

Do not initialize a disk that is part of a boot array. To determine which disks are associated with a particular array, please refer to *Viewing Array Properties.*

To initialize drives:

1. Turn on your computer and press **Ctrl+A** when prompted to access the ARC utility.
2. From the ARC menu, select **Array Configuration Utility (ACU)**.
3. Select **Initialize Drives.**
4. Use the up and down arrow keys to highlight the disk you wish to initialize and press **Insert.**
5. Repeat Step 4 so that both drives to be initialized are selected.
6. Press **Enter**.
7. Read the warning message displayed in the screen.
8. Make sure that you have selected the correct disk drives to initialize. If correct, type Y to continue.

Rebuilding Arrays

Notes: Rebuilding applies to Fault Tolerant array (RAID 1) only. If an array Build process (or initialization) is interrupted or critical with one member missing, you must perform a Rebuild to get the array to Optimal status. For a critical array Rebuild operation, the optimal drive is the source drive.

If no spare array exists and a hard disk drive fails, you need to create a spare before you can rebuild an array.

To Rebuild an array:

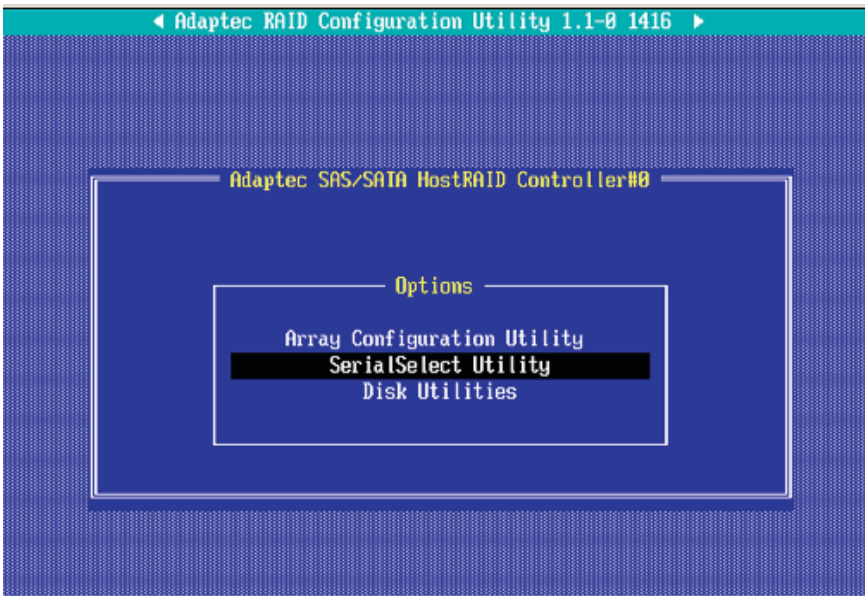
1. From the Main Menu, select **Manage Arrays**. From the List of Arrays, select the array you want to Rebuild.
2. Press **Ctrl+R** to Rebuild.

Using the SerialSelect Utility to Configure SAS Settings

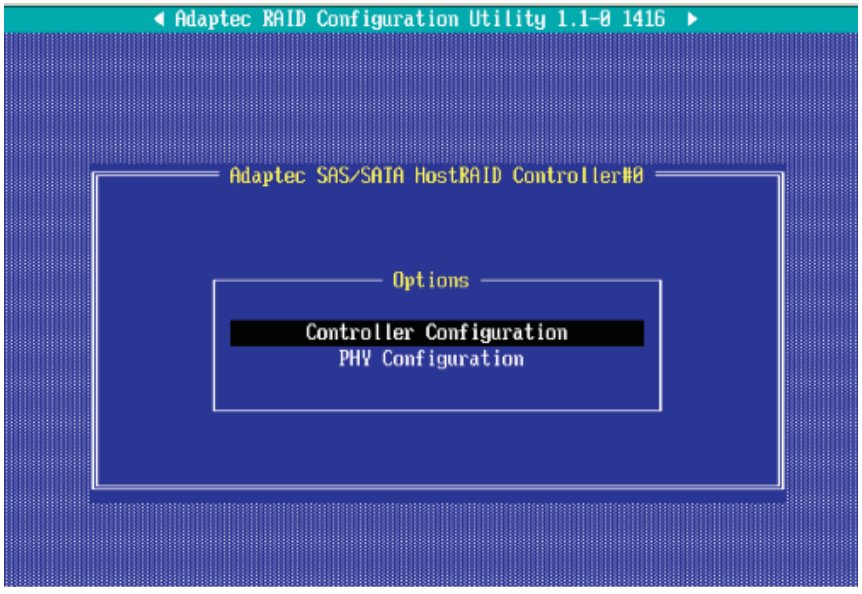
The SerialSelect Utility enables you to configure SAS disk drive settings.

To access the SAS utilities:

1. Turn on your computer and press Ctrl+A when prompted to access the ARC utility. (as shown in the screen below.)

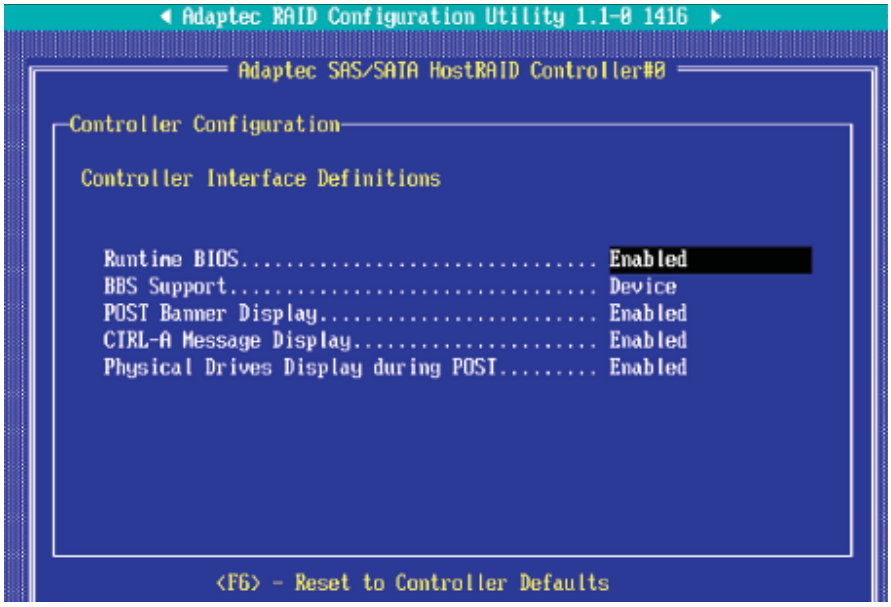


2. Use the arrow keys to select "SerialSelect Utility" and press <Enter> to access the Controller Configuration submenu:



To set the controller configuration:

3. Select "Controller Configuration" and press <Enter> to access the submen as shown below:


Adaptec RAID Configuration Utility 1.1-0 1416
Adaptec SAS/SATA HostRAID Controller#0
Controller Configuration
Controller Interface Definitions
Runtime BIOS..... Enabled
BBS Support..... Device
POST Banner Display..... Enabled
CTRL-A Message Display..... Enabled
Physical Drives Display during POST..... Enabled
<F6> - Reset to Controller Defaults

4. Use the arrow keys to select an item. Then, press <Enter> and the arrow keys to configure the setting for the item selected.

5. To load the default settings, press <F6>. Note: The default setting for each item is listed below:

Runtime BIOS: Enabled,

BBS Support: Device,

POST Banner Display: Enabled,

CTRL-A Message Display: Enabled,

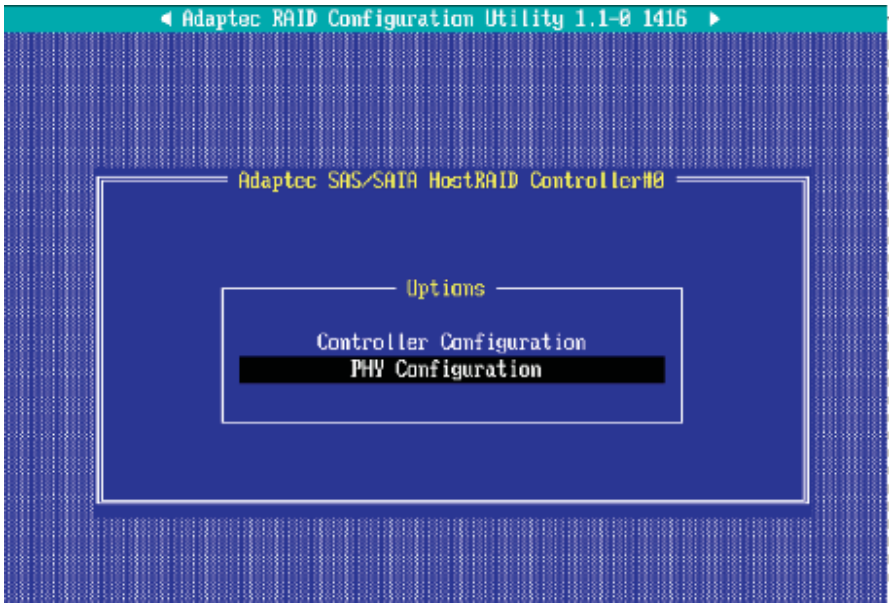
Physical Drives Display during POST: Enabled,)

6. Press <Esc> to return to the previous menu and to exit the utility.

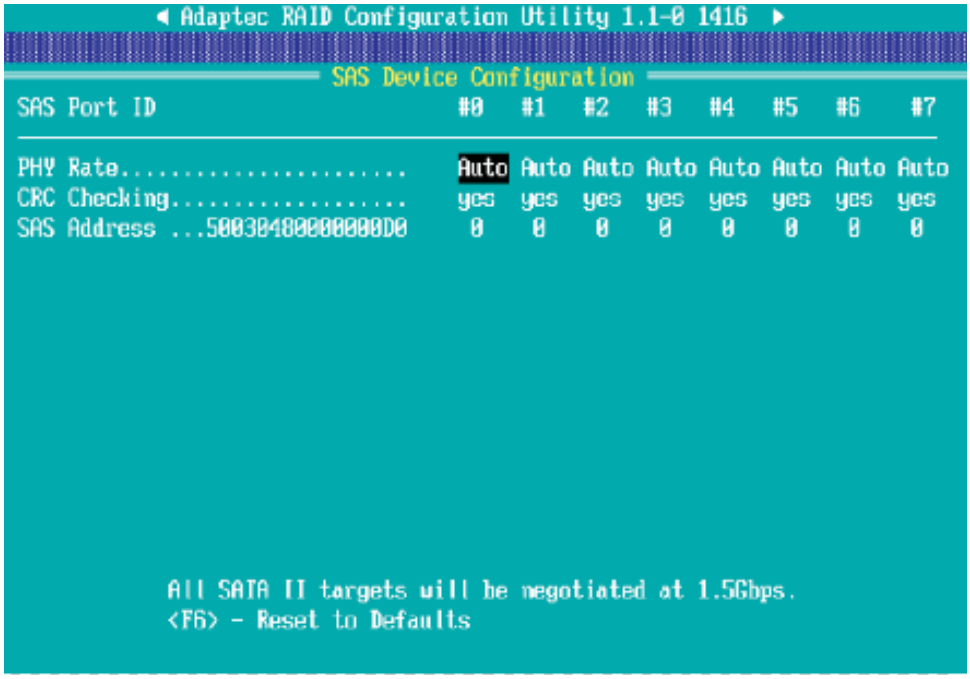
To Set the Physical Configuration:

1. Turn on the computer and press **Ctrl+A** when prompted to access the ARC utility.

2. Use the arrow keys to select "SerialSelect Utility" and press <Enter> to access the Physical Configuration submenu as shown below:



3. Select "Physical Configuration" and press <Enter> to access SAS Device Configuration submenu as shown below:


Adaptec RAID Configuration Utility 1.1-0 1416
SAS Device Configuration
SAS Port ID #0 #1 #2 #3 #4 #5 #6 #7
PHY Rate..... Auto Auto Auto Auto Auto Auto Auto Auto
CRC Checking..... yes yes yes yes yes yes yes yes
SAS Address ...500304800000000D0 0 0 0 0 0 0 0 0
All SATA II targets will be negotiated at 1.5Gbps.
<F6> - Reset to Defaults

4. Use the arrow keys to select an item. Then, press <Enter> and the arrow keys to configure the item selected.

5. To load default settings, press <F6>.

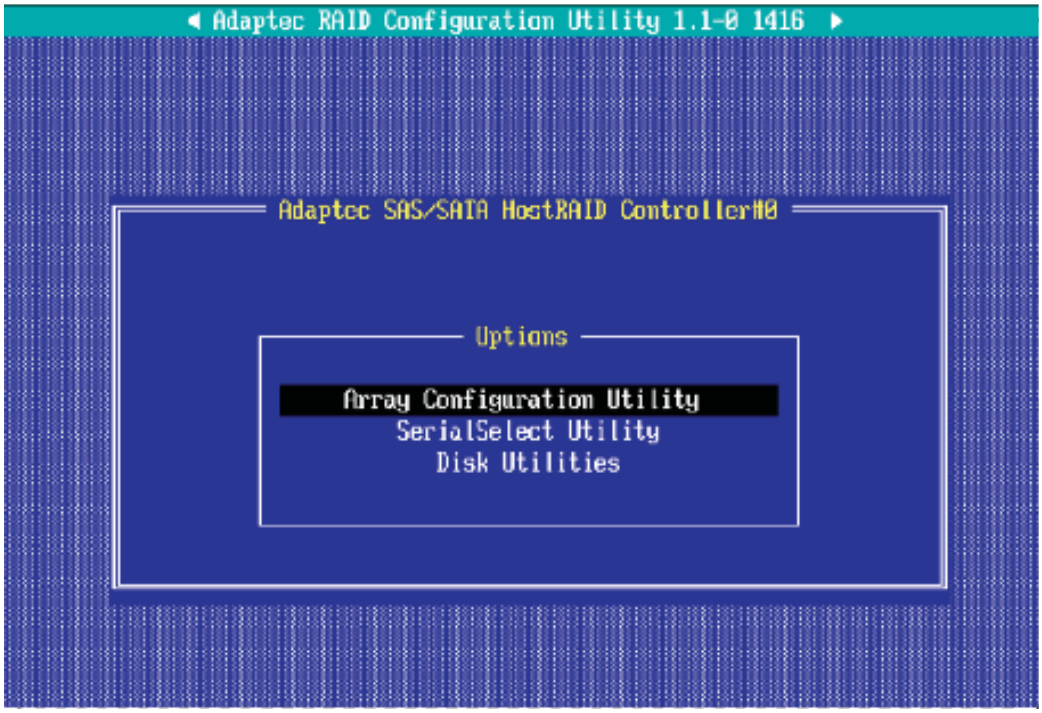
6. Press <Esc> to return to the previous menu and to exit the utility.

Using the Disk Utilities

The Disk Utilities enable you to format or verify the media of your Serial ATA hard disks.

To access the disk utilities:

1. Turn on your computer and press **Ctrl+A** when prompted to access the ARC utility (as shown in the screen below.)



2. From the ARC menu, select **Disk Utilities** from the screen as shown above and press Enter.

3. When the submenu appears, select the desired disk and press **Enter**

The following options are available:

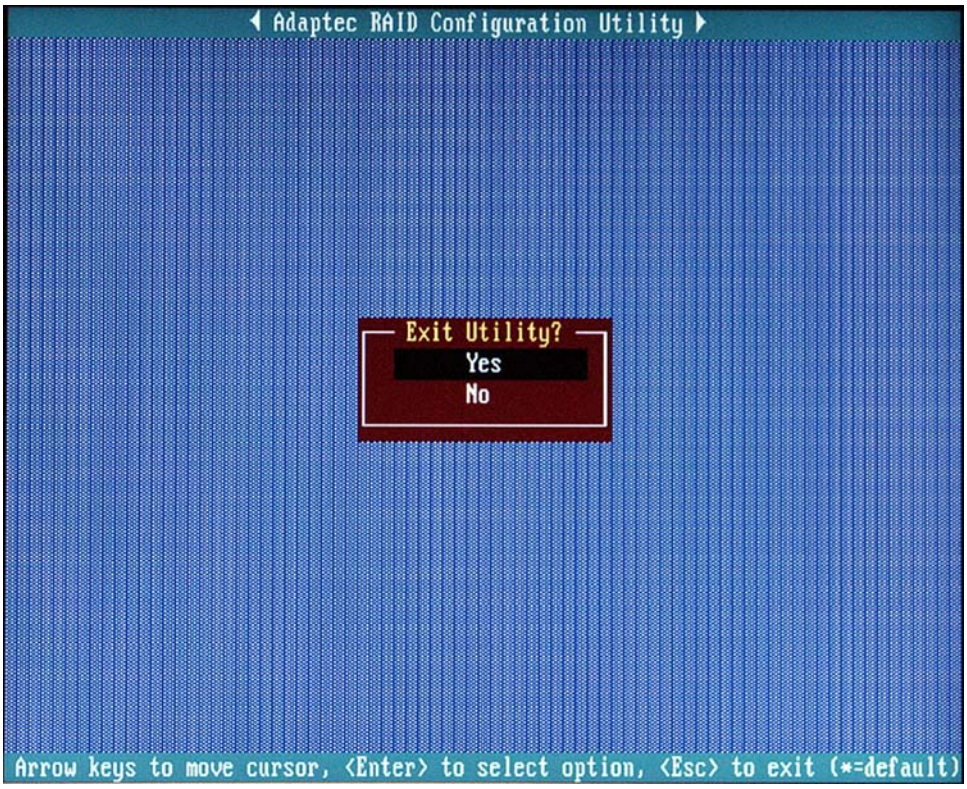
1. **Format Disk**—Simulates a low-level format of the hard drive by writing zeros to the entire disk. **Note:** Serial ATA drives are low-level formatted at the factory and do not need to be low-level formatted again. **Caution:** Formatting disk erases all data on the drive. Be sure to back up your data before performing this operation.)

2. **Verify Disk Media**—Scans the media of a disk drive for defects.

Exiting the Adaptec RAID Configuration Utility

1. Once you have completed RAID array configurations, press **ESC** to exit. The following screen will appear.

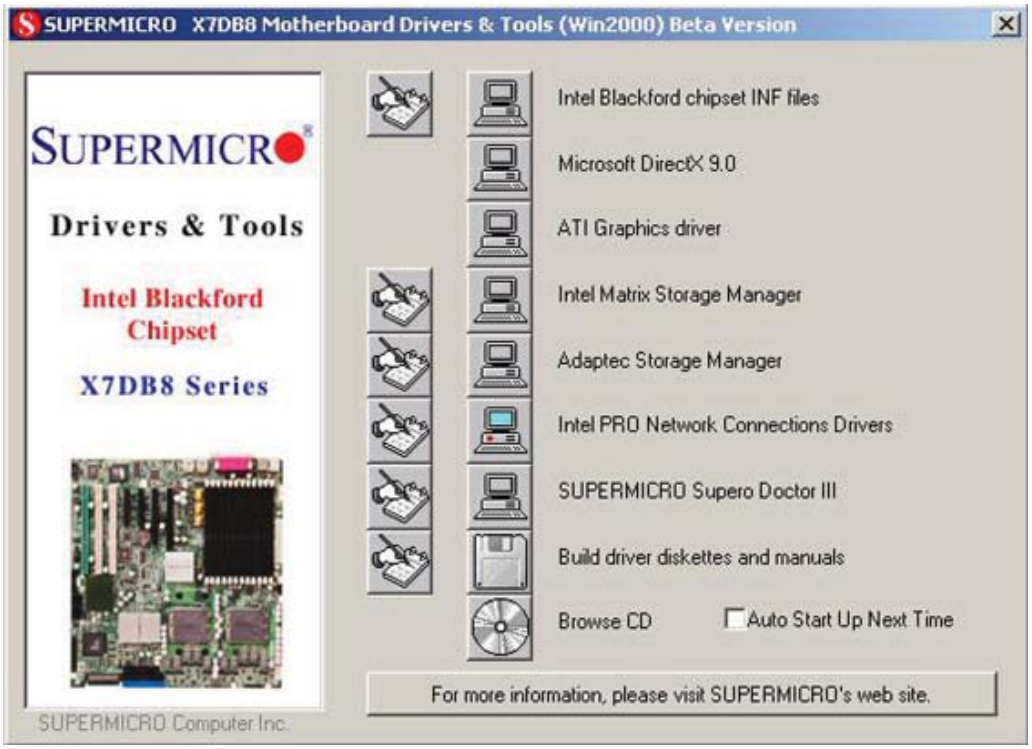
2. Press **Yes** to exit the Utility.



For more information regarding Adaptec RAID Utility, please refer to Adaptec's User's Guide in the CD included in your shipping package.

C-2 Installing Drivers

After you've installed Windows Operating System, a screen as shown below will appear. You are ready to install software programs and drivers that have not yet been installed. To install these software programs and drivers, click the icons to the right of these items.


SUPERMICRO X7DB8 Motherboard Drivers & Tools (Win2000) Beta Version
SUPERMICRO
Drivers & Tools
Intel Blackford Chipset
X7DB8 Series
SUPERMICRO Computer Inc.
Intel Blackford chipset INF files
Microsoft DirectX 9.0
ATI Graphics driver
Intel Matrix Storage Manager
Adaptec Storage Manager
Intel PRO Network Connections Drivers
SUPERMICRO Supero Doctor III
Build driver diskettes and manuals
Browse CD
Auto Start Up Next Time
For more information, please visit SUPERMICRO's web site.

Driver/Tool Installation Display Screen

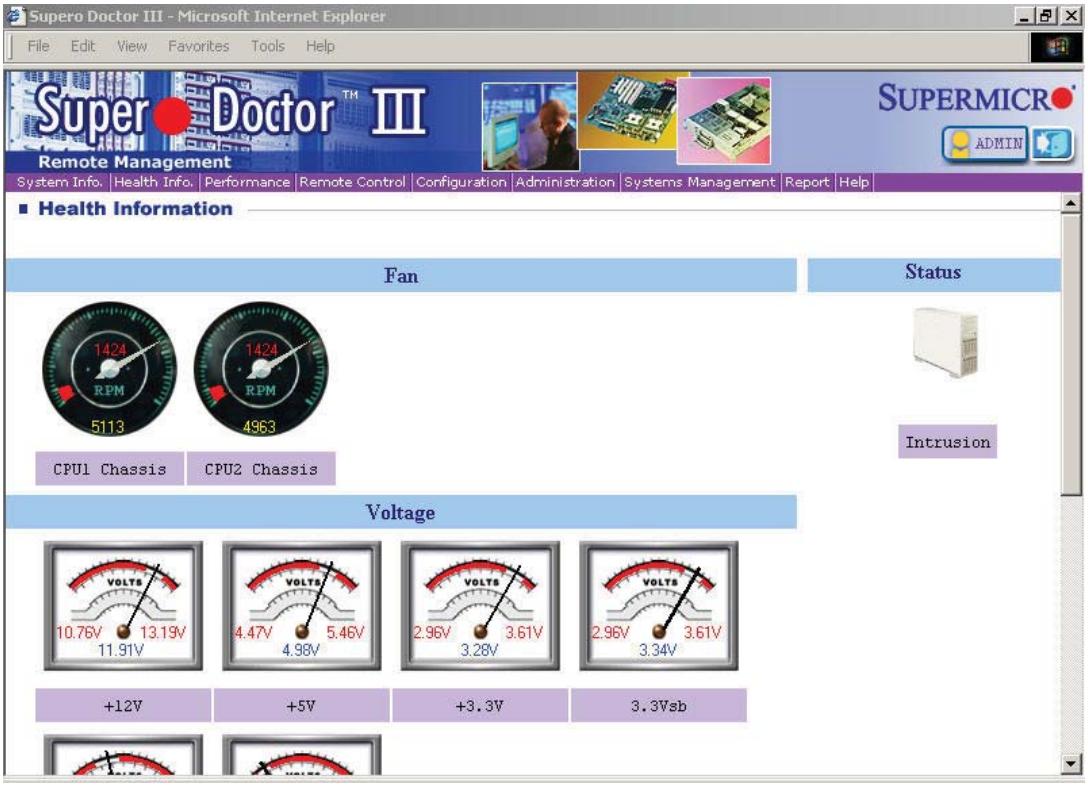
Note: Click the icons showing a hand writing on paper to view the readme files for each item. Click a computer icon to the right of an item to install an item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before proceeding with the next item on the list.** You should install everything here except for the Doctor utility, which is optional. The bottom icon with a CD on it allows you to view the entire contents of the CD.

C-3 Configuring Doctor III

The Doctor III program is a Web base management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called SD III Client. The Doctor III program included on the CDROM that came with your motherboard allows you to monitor the environment and operations of your system. Doctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the Figure below for a display of the Doctor III interface.

Note: The default User Name and Password for Doctor III is ADMIN / ADMIN.

Doctor III Interface Display Screen-I (Health Information)



Doctor III Interface Display Screen-II (Remote Control)

Supero Doctor III - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Super Doctor III
Remote Management
SUPERMICRO
ADMIN
System Info. Health Info. Performance Remote Control Configuration Administration Systems Management Report Help
Remote Control
Graceful Power Control
Open Console
Power Control
Enter
Comm.
Graceful power control
Supero Doctor III allows a user to inform the OS to reboot or shut down within a specified time (the default is 30 seconds). Before the system reboots or shuts down, it's allowed to cancel the action.
Requirements
Keep Supero SD3Service Daemon running at all times on this system.
Provide TCP/IP connectivity.
Power control

Appendix D

System Specifications

Processors
Single or dual Intel® dual-core Xeon™ 5000/5100 Sequence type processors at a front side (system) bus speed of 1333/1066/667 MHz.

Note: Please refer to our web site for a complete listing of supported processors.

Chipset
Intel 5000P/ESB2 chipset

BIOS
8 Mb Phoenix® Flash ROM

Memory Capacity
Eight 240-pin DIMM sockets supporting up to 32 GB of FBD ECC DDR2-667/533 SDRAM

Note: 2-way interleaved memory - requires memory to be installed four modules at a time. See the memory section in Chapter 5 for details.

SAS Controller
Adaptec 9410 controller for 8-port SAS (RAID 0, 1 and 10 supported)

SAS Drive Bays
Eight (8) hot-swap drive bays to house eight (8) SAS drives

Peripheral Drive Bays
One (1) slim floppy drive (optional)
One (1) DVD-ROM drive

Expansion Slots
Two PCI-Express x8 slots, one PCI-Express x4 slot, two 64-bit 133 MHz PCI-X slots and one 64-bit 100 MHz PCI-X slot

Motherboard
Model: X7DB3 (Extended ATX form factor)
Dimensions: 12 x 13 in (305 x 330 mm)

Chassis
6025B-3: SC825TQ-560LP Form Factor: 2U rackmount
6025B-3R: SC825TQ-R700LP Form Factor: 2U rackmount
Dimensions: (WxHxD) 16.8 x 3.5 x 25.5 in. (427 x 89 x 648 mm)

Weight
Gross (Bare Bone): 53 lbs. (24.1 kg.)

System Cooling
Three (3) 8-cm system cooling fans
One (1) air shroud for 2U chassis

System Input Requirements (6025B-3)
AC Input Voltage: 100-240V AC auto-range
Rated Input Current: 100 (11A) - 240V (5A)
Rated Input Frequency: 50 to 60 Hz

Power Supply (6025B-3)
Rated Output Power: 560W (Part# PWS-561-1H)
Rated Output Voltages: +3.3V (21A), +5V (25A), $+12V_{ALL}$ (43.6A), +5Vsb (3A), -12V (0.6A)

System Input Requirements (6025B-3R)
AC Input Voltage: 100-240V AC auto-range
Rated Input Current: 9.5A - 4.5A
Rated Input Frequency: 50 to 60 Hz

Power Supply (6025B-3R)
Rated Output Power: 700W (Part# PWS-702A-1R)
Rated Output Voltages: +12V (58A), +5Vsb (4A)

BTU Rating
2956 BTUs/hr (for rated output power of 560W)
3431 BTUs/hr (for rated output power of 700W)

Operating Environment

Operating Temperature: 10º to 35º C (50º to 95º F)
Non-operating Temperature: -40º to 70º C (-40º to 158º F)
Operating Relative Humidity: 8% to 90% (non-condensing)
Non-operating Relative Humidity: 5 to 95% (non-condensing)

Regulatory Compliance

Electromagnetic Emissions:
FCC Class A, EN 55022 Class A, EN 61000-3-2/-3-3, CISPR 22 Class A

Electromagnetic Immunity:
EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety:
EN 60950/IEC 60950-Compliant, UL Listed (USA), CUL Listed (Canada), TUV Certified (Germany), CE Marking (Europe)

Notes